

# NATIONAL QUALITY FORUM

## Measure Submission and Evaluation Worksheet 5.0

This form contains the information submitted by measure developers/stewards, organized according to NQF's measure evaluation criteria and process. The evaluation criteria, evaluation guidance documents, and a blank online submission form are available on the [submitting standards web page](#).

|  |  |
|--|--|
| <b>NQF #:</b> 0329   | <b>NQF Project:</b> Readmissions Project |
| (for Endorsement Maintenance Review)   |  |
| <b>Original Endorsement Date:</b> May 15, 2008 <b>Most Recent Endorsement Date:</b> May 15, 2008 <b>Last Updated Date:</b> Jun 26, 2012  |  |
| <b>BRIEF MEASURE INFORMATION</b>   |  |
| <b>De.1 Measure Title:</b> Risk-Adjusted 30-Day All-Cause Readmission Rate   |  |
| <b>Co.1.1 Measure Steward:</b> United Health Group   |  |
| <b>De.2 Brief Description of Measure:</b> 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.             |  |
| <b>2a1.1 Numerator Statement:</b> Non-behavioral health acute inpatient admissions for patients who were readmitted following a discharge from a non-behavioral health acute inpatient admission (index admission).  |  |
| <b>2a1.4 Denominator Statement:</b> 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.   |  |
| <b>2a1.8 Denominator Exclusions:</b> 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.   |  |
| <b>1.1 Measure Type:</b> Outcome<br><b>2a1. 25-26 Data Source:</b> Claims<br><b>2a1.33 Level of Analysis:</b> Facility, Health Plan, Other, Population : Community, County or City, Population : Regional and State  |  |
| <b>1.2-1.4 Is this measure paired with another measure?</b> No   |  |
| <b>De.3 If included in a composite, please identify the composite measure (title and NQF number if endorsed):</b><br>NA  |  |

### STAFF NOTES (issues or questions regarding any criteria)

#### Comments on Conditions for Consideration:

**Is the measure untested? Yes ☒ No ☐ If untested, explain how it meets criteria for consideration for time-limited endorsement:**

**1a. Specific national health goal/priority identified by DHHS or NPP addressed by the measure (check De.5):**

**5. Similar/related [endorsed](#) or submitted measures (check 5.1):**

**Other Criteria:**

**Staff Reviewer Name(s):**

## 1. IMPACT, OPPORTUNITY, EVIDENCE - IMPORTANCE TO MEASURE AND REPORT

Importance to Measure and Report is a threshold criterion that must be met in order to recommend a measure for endorsement. All three subcriteria must be met to pass this criterion. See [guidance on evidence](#).

**Measures must be judged to be important to measure and report in order to be evaluated against the remaining criteria. (evaluation criteria)**

**1a. High Impact: H ☒ M ☐ L ☐ I ☐**

*(The measure directly addresses a specific national health goal/priority identified by DHHS or NPP, or some other high impact aspect of healthcare.)*

**De.4 Subject/Topic Areas (Check all the areas that apply):**

**De.5 Non-Condition Specific (Check all the areas that apply):** [Care Coordination](#), [Infrastructure Supports](#), [Person-and Family-Centered Care](#), [Safety](#), [Safety : Complications](#)

**1a.1 Demonstrated High Impact Aspect of Healthcare:** [Affects large numbers](#), [High resource use](#), [Patient/societal consequences of poor quality](#)

**1a.2 If "Other," please describe:**

**1a.3 Summary of Evidence of High Impact (Provide epidemiologic or resource use data):**

[As an outcome measure for hospital quality of care during the hospital stay, the discharge process as well as post-discharge care coordination process, readmission has been examined in many different health condition areas such as CHF, Asthma, cardiac or other surgical procedures 1-3. However, the magnitude and impact of 30-day all-cause readmission has not been examined to a great extent. In a study that examined the proportion of Medicare expenditures attributable to readmissions to the hospital, GF Anderson and EP Steinberg 4 found that 22% of hospitalizations of Medicare beneficiaries were followed by a readmission within 60 days of discharge, which accounts for 24 % of inpatient expenditures \(\\$2.5 billion per year\) on such readmissions between 1974 and 1977. In the "Report to the Congress: Promoting Greater Efficiency in Medicare - June 2007" 5, Medicare Payment Advisory Commission \(MedPAC\) reported that readmission rate within 7 days of discharge is 6.2% and 17.6% within 30 days of discharge in Medicare population. Readmission rate among the beneficiaries with co-morbidities such as ESRD is as high as 31.6%. MedPAC estimated that the overall 30-day readmissions account for 15 billion of Medicare spending.](#)

[19.6% 30-day readmission rate for Medicare FFS patients](#)

[579,903 readmissions per year among Medicare FFS patients](#)

[90% of the 30-day readmissions of Medicare FFS patients are unplanned](#)

[10% 30-day readmission rate for commercial population](#)

[The ALOS of readmissions is 0.6 days longer than that of inpatient stays of the same DRG by the patients whose most recent hospitalization was more than 6 months ago](#)

[The estimated total cost of 30-day unplanned readmissions of Medicare FFS patients was \\$17.4 billion in](#)

2004.

MedPAC estimated total Medicare expenditures for potentially avoidable readmissions is \$12 billion a year, which accounts for about 10% of Medicare Part A annual expenditure (\$127 billion in 2007)

**1a.4 Citations for Evidence of High Impact cited in 1a.3:** 1. Luthi, J C, Burnand, B, McClellan, W M, Pitts, S R, Flanders, W D (2004). Is readmission to hospital an indicator of poor process of care for patients with heart failure? Qual Saf Health Care 13: 46-51  
2. Fleisher, L. A., Pasternak, L. R., Herbert, R., Anderson, G. F. (2004). Inpatient Hospital Admission and Death After Outpatient Surgery in Elderly Patients: Importance of Patient and System Characteristics and Location of Care. Arch Surg 139: 67-72  
3. Bisgaard, H, Møller, H (1999). Changes in risk of hospital readmission among asthmatic children in Denmark, 1978-9. BMJ 319: 229 - 230.  
4. Anderson G., Steinberg E. Hospital re-admissions in the Medicare population. N Engl J Med 1984;311:1349  
5. Medicare Payment Advisory Commission (MedPAC). Report to the Congress: Promoting Greater Efficiency in Medicare, June 2007.

6. Jencks, SF, Williams, MV, and Coleman EA. Rehospitalizations among Patients in the Medicare Fee-for Service Program. N Engl J Med 2009; 360:1418-28

**1b. Opportunity for Improvement: H● M● L● I●**

*(There is a demonstrated performance gap - variability or overall less than optimal performance)*

**1b.1 Briefly explain the benefits (improvements in quality) envisioned by use of this measure:**

Although not all of the readmissions are avoidable given the complexity of the causes/drivers of readmissions, the potential opportunity for improvement is still substantial. Studies have found that a significant proportion of the readmissions are preventable. In a literature review conducted by BJ Taragin on hospital readmissions 1, the author found that 9% to 48% of all readmissions are preventable as those readmissions are caused by poor care received during the initial index hospitalization or inadequate post-discharge care. MedPAC conducted a study 2 to identify which of the readmissions are potentially preventable by applying 3M software to Medicare claims data in 2005 and found that 84% of 7-day readmissions, 78% of 15-day readmissions and 76% of 30-day readmissions are preventable. If converted into dollars, those potentially preventable readmissions are equivalent to Medicare spending of \$5 billion for patients readmitted within 7 days, \$8 billion for patients readmitted within 15 days and as high as \$12 billion for patients readmitted within 30 days. Given the magnitude of this readmission problem, an even small decrease in the readmission rate can result in substantial savings in health care spending.

The purpose of reporting the all-cause readmission measure is to help hospitals and other providers to improve efficiency of care provided in hospital as well as at discharge. Benefits of reduced readmission rate include:

- 1) Improved efficiency as preventable readmissions cause extra financial burden to purchasers, payers and patients
- 2) Improved effectiveness of care both in-hospital and post-discharge
- 3) Improved patient safety

For consumers (patients and their families), the improvement in avoiding any unnecessary readmission significantly reduces the anxiety, financial burden and extra time demanded from being re-hospitalized. It also improves patient's safety. For purchases or payers, the improvement of preventable readmissions can significantly reduce their financial cost.

**1b.2 Summary of Data Demonstrating Performance Gap** *(Variation or overall less than optimal performance across providers): [For Maintenance – Descriptive statistics for performance results for this measure - distribution of scores for measured entities by quartile/decile, mean, median, SD, min, max, etc.]*  
Readmission rates differ across hospitals, states, and geographic regions

A MedPAC simulation found that, even after controlling for case mix and severity, readmission rates differed across hospitals.

A study by Elliott Fisher, M.D., M.P.H., et al. compared hospital readmission rates in Boston and New Haven, Conn. and found that readmission rates varied across hospitals in Boston, and that readmission rates by clinical condition, age, sex, and race were higher in Boston than in New Haven.

Readmission rates also vary across states and geographic areas. The Commonwealth Fund's 2007 State Scorecard on Health System Performance found that in 2003, readmission rates for the top five performing states (Vermont, Wyoming, Iowa, Oregon, and Nebraska) averaged 13.8 percent, while the average readmission rate for the five lowest performing states (Oklahoma, Maryland, Texas, Nevada, and Louisiana) was 21.8 percent.

**1b.3 Citations for Data on Performance Gap: [For Maintenance – Description of the data or sample for measure results reported in 1b.2 including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included]**

Source: Minott, J. Reducing Hospital Readmissions.

(<http://www.academyhealth.org/files/publications/Reducing%5FHospital%5FReadmissions.pdf>)

**1b.4 Summary of Data on Disparities by Population Group: [For Maintenance – Descriptive statistics for performance results for this measure by population group]**

NA

**1b.5 Citations for Data on Disparities Cited in 1b.4: [For Maintenance – Description of the data or sample for measure results reported in 1b.4 including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included]**

NA

**1c. Evidence (Measure focus is a health outcome OR meets the criteria for quantity, quality, consistency of the body of evidence.)**

**Is the measure focus a health outcome? Yes ☐ No ☐ If not a health outcome, rate the body of evidence.**

**Quantity: H ☐ M ☐ L ☐ I ☐ Quality: H ☐ M ☐ L ☐ I ☐ Consistency: H ☐ M ☐ L ☐ I ☐**

| Quantity | Quality | Consistency | Does the measure pass subcriterion 1c?  |
|----------|---------|-------------|---|
| M-H      | M-H     | M-H         | Yes <input type="radio"/>   |
| L        | M-H     | M           | Yes <input type="radio"/> IF additional research unlikely to change conclusion that benefits to patients outweigh harms: otherwise No <input type="radio"/> |
| M-H      | L       | M-H         | Yes <input type="radio"/> IF potential benefits to patients clearly outweigh potential harms: otherwise No <input type="radio"/>                            |
| L-M-H    | L-M-H   | L           | No <input type="radio"/>  |

**Health outcome** – rationale supports relationship to at least one healthcare structure, process, intervention, or service

**Does the measure pass subcriterion 1c?**  
Yes ☐ IF rationale supports relationship

**1c.1 Structure-Process-Outcome Relationship (Briefly state the measure focus, e.g., health outcome, intermediate clinical outcome, process, structure; then identify the appropriate links, e.g., structure-process-health outcome; process-health outcome; intermediate clinical outcome-health outcome):**

Evidence that the outcome measure has been used to detect the impact of one or more clinical interventions: Following is the list of publications that examined the impact of clinical intervention such as disease management, primary care access and post-discharge care coordination on readmission (Grade A):

1. Barbara J. Daly, Sara L. Douglas, Carol Genet Kelley, Elizabeth O'Toole, and Hugo Montenegro. Trial of a Disease Management Program to Reduce Hospital Readmissions of the Chronically Critically Ill Chest, Aug 2005; 128: 507 - 517.

2. Weinberger M, Oddone EZ, Henderson WG. Does increased access to primary care reduce hospital readmissions?

Veterans Affairs Cooperative Study Group on Primary Care and Hospital Readmission. New England Journal of Medicine. 1996; 334:1441-7.

3. Jonás Gonseth , Pilar Guallar-Castillón , José R. Banegas , and Fernando Rodríguez-Artalejo. The effectiveness of disease management programmes in reducing hospital re-admission in older patients with heart failure: a systematic review and meta-analysis of published reports Eur Heart J 25: 1570-1595.

4. Andrea M. Spehar, etc. Seamless Care: Safe Patient Transitions from Hospital to Home. Advances in Patient Safety vol1:79-98

**1c.2-3 Type of Evidence** (Check all that apply):

Clinical Practice Guideline, Selected individual studies (rather than entire body of evidence), Systematic review of body of evidence (other than within guideline development)

**1c.4 Directness of Evidence to the Specified Measure** (State the central topic, population, and outcomes addressed in the body of evidence and identify any differences from the measure focus and measure target population):

In recent years, increasing attention has been drawn to hospital readmission as an outcome measure for assessing performance of hospitals and health care delivery system. Researches show that nearly 20% of Medicare and Medicaid patients in the Fee-for-Service (FFS) program had readmissions within 30 days of discharge from an inpatient hospital stay. Reducing potentially preventable readmissions has become one of the major focuses of health care industry to improve patient care quality and outcome and reduce unnecessary cost. The population that is potentially impacted by readmission includes anyone discharged from an acute care hospital from children to adults, from privately insured to Medicare or Medicaid beneficiaries. Some studies focus on readmissions among people with certain conditions like CMS's 30-day readmission measure, while others address readmissions in a specific population like Medicare or Medicaid. All of the studies share the common goals – determining the magnitude of readmission; identifying root causes of readmission; developing quality improvement programs; and sharing the best practice.

**1c.5 Quantity of Studies in the Body of Evidence** (Total number of studies, not articles): More than a dozen studies have investigated readmissions from different aspects – readmission incidence rate in different populations, costs and patient outcomes associated with readmissions, quality improvement practices that help reduce readmission rate and payment incentive that drive the reduction of readmission rate, etc.

**1c.6 Quality of Body of Evidence** (Summarize the certainty or confidence in the estimates of benefits and harms to patients across studies in the body of evidence resulting from study factors. Please address: a) study design/flaws; b) directness/indirectness of the evidence to this measure (e.g., interventions, comparisons, outcomes assessed, population included in the evidence); and c) imprecision/wide confidence intervals due to few patients or events): Most of the studies are cross-sectional that analyzed inpatient discharge claims data to identify the patterns of readmissions and the relation of readmission to patient's demographic characteristics and hospital's characteristics. The study design is good in determining



incidence rate of readmission across different populations, however, it is weak in determining casual relationship between poor care quality and readmission outcome which requires rigorous experimental study design. Cross-section study design can still demonstrate the correlation between poor care quality and readmission. Even lack of a true experimental study design, health care experts have confidence in believing that poor care quality received during hospital stay and after discharge contribute to readmissions. This has been further proven by the evidence of reduced readmission rate after an intervention program or quality program was implemented.

Since all of the studies used inpatient discharge claims data of multiple years which is large volume, imprecision or wide confidence interval due to small sample size is not an issue that were addressed in the studies.

**1c.7 Consistency of Results across Studies** (*Summarize the consistency of the magnitude and direction of the effect*): The results from published studies are consistent - 30-day all-cause readmission rate is around 10% among privately insured population, 20% among Medicaid and Medicare fee for service population. The root causes of readmission are related to poor care quality received during hospital stay, poor discharge planning upon discharge, and poor care coordination among hospitals and primary care doctors after discharge. Also studies consistently show there are large variations in readmission rate across geographic areas. Readmission rates also vary across states and geographic areas. The Commonwealth Fund's 2007 State Scorecard on Health System Performance found that in 2003, readmission rates for the top five performing states (Vermont, Wyoming, Iowa, Oregon, and Nebraska) averaged 13.8 percent, while the average readmission rate for the five lowest performing states (Oklahoma, Maryland, Texas, Nevada, and Louisiana) was 21.8 percent. Within the same geographic area, readmission rate varies among hospitals. A study by Elliott Fisher, M.D., M.P.H., et al. compared hospital readmission rates in Boston and New Haven, Conn. and found that readmission rates varied across hospitals in Boston, and that readmission rates by clinical condition, age, sex, and race were higher in Boston than in New Haven. The large variations in readmission suggests there is a big opportunity for the health care delivery system to take to improve patient care quality and outcome and reduce health care cost.

**1c.8 Net Benefit** (*Provide estimates of effect for benefit/outcome; identify harms addressed and estimates of effect; and net benefit - benefit over harms*):

MedPAC estimated total Medicare expenditures for potentially avoidable readmissions is \$12 billion a year, which accounts for about 10% of Medicare Part A annual expenditure (\$127 billion in 2007). If readmissions can be reduced by 10%, the annual savings on Medicare cost would be \$1.2 billion. Reducing readmissions also improves patient's care quality and outcome, reduces care giving burden on patient's family, and reduces financial burden on patient and his/her family. There are no harms to any parties from readmission reduction.

**1c.9 Grading of Strength/Quality of the Body of Evidence.** Has the body of evidence been graded? **No**

**1c.10 If body of evidence graded, identify the entity that graded the evidence including balance of representation and any disclosures regarding bias:** We searched online and did not find any grading on the body of evidence of readmissions.

**1c.11 System Used for Grading the Body of Evidence:** Other

**1c.12 If other, identify and describe the grading scale with definitions:** We searched online and did not find any grading on the body of evidence of readmissions.

**1c.13 Grade Assigned to the Body of Evidence:** N/A

**1c.14 Summary of Controversy/Contradictory Evidence:** N/A

**1c.15 Citations for Evidence other than Guidelines**(*Guidelines addressed below*):

<http://www.bu.edu/fammed/projectred/components.html>

<https://secure.quantiamd.com/home/hospitalreadmissions>

**1c.16 Quote verbatim, the specific guideline recommendation** (*Including guideline # and/or page #*):

1. Educate the patient about his or her diagnosis throughout the hospital stay.
2. Make appointments for clinician follow-up and post-discharge testing and
  - Make appointments with input from the patient regarding the best time and date of the appointment.
  - Coordinate appointments with physicians, testing, and other services.
  - Discuss reason for and importance of physician appointments.
  - Confirm that the patient knows where to go, has a plan about how to get to the appointment; review transportation options and other barriers to keeping these appointments.
3. Discuss with the patient any tests or studies that have been completed in the hospital and discuss who will be responsible for following up the results.
4. Organize post-discharge services.
  - Be sure patient understands the importance of such services.
  - Make appointments that the patient can keep.
  - Discuss the details about how to receive each service.
5. Confirm the Medication Plan.
  - Reconcile the discharge medication regimen with those taken before the hospitalization.
  - Explain what medications to take, emphasizing any changes in the regimen.
  - Review each medication's purpose, how to take each medication correctly, and important side effects to watch out for.
  - Be sure patient has a realistic plan about how to get the medications.
6. Reconcile the discharge plan with national guidelines and critical pathways.
7. Review the appropriate steps for what to do if a problem arises.
  - Instruct on a specific plan of how to contact the PCP (or coverage) by providing contact numbers for evenings and weekends.
  - Instruct on what constitutes an emergency and what to do in cases of emergency.
8. Expedite transmission of the Discharge Resume (summary) to the physicians (and other services such as the visiting nurses) accepting responsibility for the patient's care after discharge that includes:
  - Reason for hospitalization with specific principal diagnosis.
  - Significant findings. (When creating this document, the original source documents – e.g. laboratory, radiology, operative reports, and medication administration records – should be in the transcriber's immediate possession and be visible when it is necessary to transcribe information from one document to another.)
  - Procedures performed and care, treatment, and services provided to the patient.
  - The patient's condition at discharge.
  - A comprehensive and reconciled medication list (including allergies).
  - A list of acute medical issues, tests, and studies for which confirmed results are pending at the time of discharge and require follow-up.
  - Information regarding input from consultative services, including rehabilitation therapy.
9. Assess the degree of understanding by asking them to explain in their own words the details of the plan.
  - May require removal of language and literacy barriers by utilizing professional interpreters.
  - May require contacting family members who will share in the care-giving responsibilities.

10. Give the patient a written discharge plan at the time of discharge that contains:

- Reason for hospitalization.
- Discharge medications including what medications to take, how to take them, and how to obtain the medication.
- Instructions on what to do if their condition changes.
- Coordination and planning for follow-up appointments that the patient can keep.
- Coordination and planning for follow-up of tests and studies for which confirmed results are not available at the time of discharge.

11. Provide telephone reinforcement of the discharge plan and problem-solving 2-3 days after discharge.

**1c.17 Clinical Practice Guideline Citation:** We use Milliman Care Guidelines, as well as peer-reviewed research regarding the Re-engineered Discharge planning (RED study from Boston University), Better Outcomes for Older Seniors (BOOST study from Northwestern University and sponsored by the Society for Hospital Medicine) and the research led by Dr. Eric Coleman from the University of Colorado.

**1c.18 National Guideline Clearinghouse or other URL:** [www.careguidelines.com](http://www.careguidelines.com);  
<http://www.bu.edu/fammed/projectred/components.html>;  
<https://secure.quantiamd.com/home/hospitalreadmissions>

**1c.19 Grading of Strength of Guideline Recommendation.** Has the recommendation been graded? **No**

**1c.20 If guideline recommendation graded, identify the entity that graded the evidence including balance of representation and any disclosures regarding bias:**

**1c.21 System Used for Grading the Strength of Guideline Recommendation:** **Other**

**1c.22 If other, identify and describe the grading scale with definitions:** We did not find grading of strength of guideline recommendation.

**1c.23 Grade Assigned to the Recommendation:** **N/A**

**1c.24 Rationale for Using this Guideline Over Others:** Project Re-Engineered Discharge is a research group at Boston University Medical Center that develops and tests strategies to improve the hospital discharge process in a way that promotes patient safety and reduces re-hospitalization rates. The RED (re-engineered discharge) intervention is founded on 11 discrete, mutually reinforcing components and has been proven to reduce rehospitalizations and yields high rates of patient satisfaction. Virtual patient advocates are currently being tested in conjunction with the RED. In addition, Project RED has started to implement the re-engineered discharge at other hospitals serving diverse patient populations. In addition, the Re-Engineered Discharge paper STFM received the Best Research Paper Award for 2010 from the Society of Teachers of Family Medicine.

**Based on the NQF descriptions for rating the evidence, what was the developer's assessment of the quantity, quality, and consistency of the body of evidence?**

**1c.25 Quantity:** **High** **1c.26 Quality:** **High** **1c.27 Consistency:** **High**

**1c.28 Attach evidence submission form:**

**1c.29 Attach appendix for supplemental materials:**

**Was the threshold criterion, *Importance to Measure and Report*, met?**

**(1a & 1b must be rated moderate or high and 1c yes) Yes ☐ No ☒**

**Provide rationale based on specific subcriteria:**

**For a new measure if the Committee votes NO, then STOP.**

See Guidance for Definitions of Rating Scale: H=High; M=Moderate; L=Low; I=Insufficient; NA=Not Applicable

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**For a measure undergoing endorsement maintenance, if the Committee votes NO because of 1b. (no opportunity for improvement), it may be considered for continued endorsement and all criteria need to be evaluated.**

## 2. RELIABILITY & VALIDITY - SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **(evaluation criteria)**

Measure testing must demonstrate adequate reliability and validity in order to be recommended for endorsement. Testing may be conducted for data elements and/or the computed measure score. Testing information and results should be entered in the appropriate field. Supplemental materials may be referenced or attached in item 2.1. See [guidance on measure testing](#).

**S.1 Measure Web Page** (*In the future, NQF will require measure stewards to provide a URL link to a web page where current detailed specifications can be obtained*). Do you have a web page where current detailed specifications for this measure can be obtained? **Yes**

**S.2 If yes, provide web page URL:**

[http://www.uhc.com/physicians/practice\\_resources/nqf\\_readmission\\_measure\\_resubmission.htm](http://www.uhc.com/physicians/practice_resources/nqf_readmission_measure_resubmission.htm)

**2a. RELIABILITY. Precise Specifications and Reliability Testing: H● M● L● I●**

**2a1. Precise Measure Specifications.** (*The measure specifications precise and unambiguous.*)

**2a1.1 Numerator Statement** (*Brief, narrative description of the measure focus or what is being measured about the target population, e.g., cases from the target population with the target process, condition, event, or outcome*):

Non-behavioral health acute inpatient admissions for patients who were readmitted following a discharge from a non-behavioral health acute inpatient admission (index admission).

**2a1.2 Numerator Time Window** (*The time period in which the target process, condition, event, or outcome is eligible for inclusion*):

An admission is considered to be a readmission if its admit date is within 30 days following the discharge date of the index admission for the same patient for cases that are eligible for inclusion. When claims are the data source, we recommend a minimum of an additional three months for claims run out.

**2a1.3 Numerator Details** (*All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, codes with descriptors, and/or specific data collection items/responses*):

The numerator cases are selected from the denominator for the same measurement period plus admissions for another 30 days to capture readmissions. Any time period can be used so long as an additional 30 days are included to search for the eligible readmissions. An index admission is considered to have only one readmission, so only the first one that occurs within 30 days is identified as the readmission case. A readmission can also be an index admission if the same patient has another eligible readmission after the second admission. Because this is an all-cause measure, there is no need to match diagnostic conditions with the index admission. The exclusions from the numerator are the same as those applied to the denominator: 1) admissions for patients who died during the hospital stay (based on discharge status of 20, 40, 41, or 42), 2) admissions for mental disorders or substance abuse treatment (AHRQ Chapter 5).

**2a1.4 Denominator Statement** (*Brief, narrative description of the target population being measured*):

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.

**2a1.5 Target Population Category** (*Check all the populations for which the measure is specified and tested if any*): [Adult/Elderly Care](#), [Maternal Care](#)

**2a1.6 Denominator Time Window** (*The time period in which cases are eligible for inclusion*):  
Any time window or measurement period can be selected, depending upon availability of data and reporting needs. When claims are the data source, we recommend a minimum of an additional three months for claims run out.

**2a1.7 Denominator Details** (*All information required to identify and calculate the target population/denominator such as definitions, codes with descriptors, and/or specific data collection items/responses*):

If hospital electronic medical records are used, the denominator is all eligible acute inpatient cases for the measurement period. If health insurance claims are the data source, then we recommend inpatient data be based on claims incurred through the measurement period plus a minimum of three months of paid claims after the end of the measurement period. Inpatient claims should be grouped together into one record per acute inpatient case. Inpatient claims should further be collapsed so that cases that are transferred to another acute care facility on the same day as the discharge from the index case are merged into one record, keeping the transfer's discharge date as the index discharge date.

**2a1.8 Denominator Exclusions** (*Brief narrative description of exclusions from the target population*):  
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.

**2a1.9 Denominator Exclusion Details** (*All information required to identify and calculate exclusions from the denominator such as definitions, codes with descriptors, and/or specific data collection items/responses*):

Exclude cases where the patient died during the admission based on discharge status codes (20, 40, 41, and 42) and cases for mental health or substance abuse (AHRQ Chapter 5). For administrative or claims data we recommend the following additional exclusions: 1) cases without a valid patient identifier, a valid hospital identifier or a valid diagnosis code; 2) cases where the discharge date is missing or invalid, 3) and any non-acute inpatient cases.

**2a1.10 Stratification Details/Variables** (*All information required to stratify the measure results including the stratification variables, codes with descriptors, definitions, and/or specific data collection items/responses*):

Variables needed to calculate the observed readmit rate include: 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) [details supplied in a later section].

**2a1.11 Risk Adjustment Type** (*Select type. Provide specifications for risk stratification in 2a1.10 and for statistical model in 2a1.13*): [Stratification by risk category/subgroup](#)    **2a1.12 If "Other," please describe:**

**2a1.13 Statistical Risk Model and Variables** (*Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development should be addressed in 2b4.*):

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.

**2a1.14-16 Detailed Risk Model Available at Web page URL** (or attachment). Include coefficients, equations, codes with descriptors, definitions, and/or specific data collection items/responses. Attach documents only if they are not available on a webpage and keep attached file to 5 MB or less. NQF strongly prefers you make documents available at a Web page URL. Please supply login/password if needed:  
**URL**  
[http://www.uhc.com/live/uhc\\_com/Assets/Documents/Detailed\\_Risk\\_Model\\_2a1\\_14.pdf](http://www.uhc.com/live/uhc_com/Assets/Documents/Detailed_Risk_Model_2a1_14.pdf)

**2a1.17-18. Type of Score:** Ratio

**2a1.19 Interpretation of Score** (Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score):  
 Better quality = Lower score

**2a1.20 Calculation Algorithm/Measure Logic** (Describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; aggregating data; risk adjustment; etc.):

Two approaches are shown, one for retrospective analysis of readmit performance and the other for use in Electronic Health Record system.

I. To perform retrospective analyses of the readmit rate, where the data source is administrative or claims data:

A. Pre-processing

- 1) Determine the target population you want to study and additional variables you may need to facilitate the aggregate analysis of the data (examples: type of coverage, region, and hospital market).
- 2) Determine the measurement period you want to study.

B. Prepare Target Population File

- 1) Collect inpatient acute care admissions for the desired target population and desired measurement period plus an additional 30 days after the end of the desired measurement period. If using claims data be sure the data has been generated after having a claims run out period of a minimum of three months.
- 2) Group interim claims of one inpatient stay into one confinement case.
- 3) For admissions that are transferred to another acute care hospital on the same day as the discharge day, keep the original admission date as the index admission date but use the transfer's discharge date as the Index discharge date. Discard the transfer records.
- 4) Apply exclusion criteria to the remaining target population (cases in the desired measurement period plus cases in the subsequent 30 days). Discard the excluded records.
- 5) Assign age band to the remaining records: values are '0 to 64' or '65+' based on age at discharge.

C. Numerator Steps:

- 1) Apply logic to create a new field (readmit\_flag) to records with a discharge date in the measurement period. Logic: readmit\_flag = 1 when the admit date of the next inpatient case in the remaining target population is within 30 days of the discharge date of the index admission. If there is no admit within 30 days

of discharge, the value is 0. The value is placed on the record of the index admission (rather than on the readmission). Readmissions are accountable to the hospital associated with the index admission.

2) Discard the cases in the remaining target population that do not occur during the measurement period.

Note about exclusions: because we are using the denominator and additional records for the subsequent 30 days to search for the numerator, we do not need to apply the exclusions as they were already excluded from the denominator.

#### D. Readmission Risk Category and Weight Assignment:

Join the remaining target population records with the RRC lookup table based on age band, diagnosis code and procedure code and add new fields: Readmission\_Risk\_Category and RRC\_weight.

#### E. Prepare Summary File for Aggregated Analysis

Calculate the actual readmit rate for the desired analysis variables as well as the adjusted readmit rate based on the RRC weights.

- 1) Summarize cases according to the analysis variables of interest (e.g., hospital and year).
- 2) Using that summary file, create a new summary file and calculate three new fields:
  - Hospital Observed Readmission Rate
  - o Readmits/Admits
  - Average RRC Factor
  - o Total Hospital RRC Factor/Hospital Discharge Count
  - RRC Risk Adjusted Readmit Rate
  - o Hospital Observed Readmission Rate / Average RRC Factor

#### F. Interpret Results

The RRC Risk Adjusted Readmit Rate allows an organization to compare readmit rates across any level of aggregation (years, hospitals, attending physicians, etc.) as the influence of case mix has been removed by the risk-adjustment.

II. For use in a hospital Electronic Health Record (EHR) system to identify cases with higher than average chance of readmission:

#### A. Prepare Records for RRC Weight Assignment

- 1) Select records for current non-behavioral health inpatient cases (fields to include: patient id or case id, primary diagnosis, primary procedure, age, plus any additional fields desired for analysis, such as admitting physician or health plan)
- 2) Add field for age band - if age between 0 and 64 then '0 to 64', if age greater than or equal to 65 then '65+'.

#### B. Readmission Risk Category and Weight Assignment

Readmission Risk Category and RRC Weight can be determined using the RRC Lookup table containing diagnosis and procedure code mappings by age band. (The RRC Lookup table has been submitted as an attachment in response to section 2a1.30. Data Dictionary or Code Table.)

Join records with RRC look-up table, joining on age band, primary diagnosis and primary procedure and add new fields: Readmission Risk Category and RRC weight. Discard records which do not have a match with the RRC Lookup table.

### C. Interpret Results

Look for cases with high RRC Weight to determine if additional intervention or discharge planning might help to prevent the readmission.

#### 2a1.21-23 Calculation Algorithm/Measure Logic Diagram URL or attachment:

URL

[http://www.uhc.com/live/uhc\\_com/Assets/Documents/Calculation\\_Algorithm\\_Logic\\_Diagram\\_2a1\\_22.pdf](http://www.uhc.com/live/uhc_com/Assets/Documents/Calculation_Algorithm_Logic_Diagram_2a1_22.pdf)

**2a1.24 Sampling (Survey) Methodology.** If measure is based on a sample (or survey), provide instructions for obtaining the sample, conducting the survey and guidance on minimum sample size (response rate):

NA

**2a1.25 Data Source** (*Check all the sources for which the measure is specified and tested*). If other, please describe:

Claims

**2a1.26 Data Source/Data Collection Instrument** (*Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.*): Data sources can be the hospital electronic health record or acute inpatient claims data aggregated into one record per admission.

#### 2a1.27-29 Data Source/data Collection Instrument Reference Web Page URL or Attachment: URL

[http://www.uhc.com/live/uhc\\_com/Assets/Documents/Data\\_Collection\\_Instrument\\_2a1\\_27.pdf](http://www.uhc.com/live/uhc_com/Assets/Documents/Data_Collection_Instrument_2a1_27.pdf)

#### 2a1.30-32 Data Dictionary/Code Table Web Page URL or Attachment:

Attachment

[RRC\\_LOOKUP\\_2a1\\_30.pdf](#)

**2a1.33 Level of Analysis** (*Check the levels of analysis for which the measure is specified and tested*):

Facility, Health Plan, Other, Population : Community, County or City, Population : Regional and State

**2a1.34-35 Care Setting** (*Check all the settings for which the measure is specified and tested*):

Inpatient/Hospital

**2a2. Reliability Testing.** (*Reliability testing was conducted with appropriate method, scope, and adequate demonstration of reliability.*)

**2a2.1 Data/Sample** (*Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included*):

The sample used to create and test the reliability of the Readmission Risk Categories and their associated factors included UnitedHealthcare's inpatient claims experience. The dataset has the following characteristics:

- Discharge dates: CY 2008 – 2010
- Membership: Inpatient confinements for commercial and Medicare members split into 0 - 64 years



and 65+ years of age at discharge.

- Number of 0 – 64 Discharges: 2,872,088
- Number of 0 – 64 Readmissions: 252,400
- Number of 65+ Discharges: 1,019,963
- Number of 65+ Readmissions: 157,292
- Distinct Readmission Risk Categories for 0 – 64 population: 176
- Distinct Readmission Risk Categories for 65+ population: 171

Reliability testing was conducted on the group above after splitting discharges into two random groups. Randomization into groups was based whether the discharge fell on an odd or even day of the month:

#### Group Number 1

- 0 – 64: 1,414,801 discharges; 124,165 readmissions
- 65+: 500,647 discharges; 77,292 readmissions

#### Group Number 2

- 0 – 64: 1,457,287 discharges; 128,235 readmissions
- 65+: 519,316 discharges; 80,000 readmissions

### **2a2.2 Analytic Method** (*Describe method of reliability testing & rationale*):

Readmission Risk Categories (RRCs) and readmission factors were based solely on data from group 1. To test the consistency of the measure, we evaluated the degree to which the readmission factors derived from group 1 could accurately predict the actual readmission rates of in group 2 as shown below:

1. Three years of discharge data were split into two randomized groups based on whether the day of discharge was odd or even.
2. Readmit weights for group 1 were generated at the age band and RRC level = (readmit rate for the age band and RRC/ readmit rate at the age band level).
3. Group 1 readmit weights were applied to confinement-level records by matching records on age band and RRC.
4. An expected readmit probability was then generated for each group 2 confinement by dividing the group 1 readmit weight by the group 2 total readmit rate for the same age band.
5. The actual and expected readmit rates were calculated at the age band/RRC and at the age band/hospital level (excluding hospital/age band combinations with fewer than 250 admits over the three year period)
6. We then produced a series of diagnostic plots in SAS generated from a regression of actual to expected readmit rates, including:
  - FitPlot
  - Plot of the residuals
  - Plot of the predicted values against the actual

The same method described above was repeated for group 1 and group 2 discharges using the APR-DRG in place of RRCs and readmit factors generated by APR-DRG. This second test was intended to further evaluate the performance of the measure and to ensure that the categorization scheme was segregating confinements into clinically relevant buckets. We wanted to test whether the RRCs perform at least as well as comparable readmission scores derived from 3M APR-DRGs, an industry-standard clinical classification for grouping claims based on diagnosis.

### **2a2.3 Testing Results** (*Reliability statistics, assessment of adequacy in the context of norms for the test conducted*):

The results below show parameter estimates and fit statistics for bivariate ordinary least squares regressions. The dependent variable is the actual rate of readmissions within 30 days. This is regressed

on the expected rate of readmissions for group 2 based on the group 1 RRC factors.

At the RRC level, the actual and expected readmission rates are highly correlated. For members under 65, the predicted readmission rate at the category level explains more than 98% of the variance in actual readmission rates in group 2. For members 65 and over, the predicted readmission rate explains more than 89% of the actual variance in readmissions by RRC.

We also do not see any evidence of systematic over- or under-prediction of actual readmission rates across RRC categories. For both age bands, the intercept is equal to zero and the slope of the line is insignificantly different from 1 at the .05 level. We take this as evidence that the factors are performing well across the full range of RRC categories.

Testing of the Actual vs. Expected at the Readmission Risk Category Level:

0 – 64 (176 observations)

- R2: 0.989
- Intercept: 0.001
- Parameter estimate: 0.995\*\*
- P value for F-test of Estimate=1: 0.43

65+ (171 observations)

- R2: 0.895
- Parameter estimate: 0.955\*\*
- P value for F-test of Estimate=1: 0.08+

(1) \*\* Significant at < .01, \* Significant at < .05, + Significant at < .10

Readmission factors constructed using APR-DRG to produce expected readmission rates did not perform as well as RRCs at predicting actual readmission rates in group 2. This might be expected as 3M APR-DRGs are designed to predict total billed charges, but is a useful benchmark of whether the non-proprietary grouping methodology is able to group inpatient events into clinically relevant categories for the purposes of predicting readmissions.

The regressions below show that for members 0-64, APR-DRGs performed comparably – although not quite as well – as RRC categories in predicting group 2 readmissions. For members over 65, APR-DRGs performed significantly worse than RRCs.

Testing of the Actual vs. Expected at the APR-DRG Level:

0 – 64 (300 observations)

- R2: 0.954
- Intercept: 0.004\*\*
- Parameter estimate: 0.981\*\*
- P value for F-test of Estimate=1: 0.12

65+ (257 observations)

- R2: 0.475
- Intercept: 0.054\*\*
- Parameter estimate: 0.662\*\*
- P value for F-test of Estimate=1: <.01\*\*

**2b. VALIDITY. Validity, Testing, including all Threats to Validity: H● M● L● I●**

**2b1.1 Describe how the measure specifications (measure focus, target population, and exclusions) are consistent with the evidence cited in support of the measure focus (criterion 1c) and identify any**

**differences from the evidence:**

To confirm that the Risk-Adjusted 30-day All-Cause Readmission Rate is a valid measure of hospital quality and outcome, both face validity testing and convergent validity testing have been conducted. The face validity test included gathering opinions from Medical Directors within UnitedHealthcare on how a hospital quality and outcome performance should be measured and it has been uniformly agreed that readmission is one of the key measures. Also, literature review shows that experts of US health care industry all strongly recommend that 30-day readmission rate of hospitals be measured and reported to improve patient care.

The measure specifications are consistent with the measure focus. The measure allows not only for a comparison of readmit rate across entities, but also for a comparison of readmit rate values within an entity over time or across subpopulations. This feature allows users to both monitor performance over time and isolate areas with improvement opportunity,

**2b2. Validity Testing.** (*Validity testing was conducted with appropriate method, scope, and adequate demonstration of validity.*)

**2b2.1 Data/Sample** (*Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included*):

The sample used to test the validity of the Readmission Risk Categories and their associated factors included UnitedHealthcare's inpatient claims experience. The dataset has the following characteristics:

- Discharge dates: CY 2008 – 2009
- Membership: Inpatient confinements for commercial and Medicare members split into 0 - 64 years and 65+ years of age at discharge
- Number of 0 – 64 Discharges: 1,961,145
- Number of 0 – 64 Readmissions: 171,168
- Number of 65+ Discharges: 637,849
- Number of 65+ Readmissions: 101,033
- Distinct Readmission Risk Categories for 0 – 64 population: 176
- Distinct Readmission Risk Categories for 65+ population: 171

**2b2.2 Analytic Method** (*Describe method of validity testing and rationale; if face validity, describe systematic assessment*):

To further test the internal validity of the measure and its ability to segment a population into groups with clinically relevant differences in readmission rates, we broke discharges for two adjacent years into deciles based on the value of the expected readmission factor and find that the readmission factor successfully stratified our claims population into groups with substantively different clinical outcomes.

In addition, we tested whether the expected readmission rates derived from the group 1 factors could successfully predict the 30 day readmit rate in an average facility in group 2 by age band and RRC.

**2b2.3 Testing Results** (*Statistical results, assessment of adequacy in the context of norms for the test conducted; if face validity, describe results of systematic assessment*):

The results show that for both years and age bands, the actual readmission rate rose monotonically by decile. The rate of increase by decile was also very consistent between 2008 and 2009.

Because we have a large sample of administrative claims data, even small differences are statistically significant. The second column for each year shows the percent difference in the actual readmission rate compared to the 5th decile. All values are statistically significant with a p value of < .01.

Beyond that, however, we note that the groups in the table have stratified the population into groups with substantively different clinical outcomes. Members under 65 in the bottom two deciles have less than a 2% chance of readmission while members in the top decile have more than a 27% chance of readmission within

30 days of discharge. We observe the same pattern for members over 65, with the actual probability of readmission ranging from 7% in the bottom decile to more than 25% in the top decile.

In a second test, we evaluated whether the expected readmission rates derived from the group 1 factors could successfully predict the 30 day readmit rate in an average facility in group 2 by age band and RRC (see [http://www.uhc.com/live/uhc\\_com/Assets/Documents/Supplemental\\_Testing\\_Methodology\\_Exhibits.ppt](http://www.uhc.com/live/uhc_com/Assets/Documents/Supplemental_Testing_Methodology_Exhibits.ppt) for the results table). For this second test, we selected a sample of large facilities, defined as those having more than 250 admits over a 3 year period.

Using data from 2009, we computed the actual 30 day readmission rate in average large facility for each of the 345 combinations of age band and RRC present in those hospitals. Using a t-test, we compared the facility average performance in each category to the readmission rate predicted by the factor. This test is different from the groups 1 and 2 reliability test above because the actual experience was calculated using facility – rather than population – averages. Since many of the cell sizes will be small, we can expect more variability in facility-level results than in population-level results. This test also enables us to determine whether the performance of an average facility differs systematically from the population average supplied by the weight.

At the .05 level, we found that the average facility's performance was equal to the predicted value in more than 90% (312 out of 345) of the tests.

**POTENTIAL THREATS TO VALIDITY.** (*All potential threats to validity were appropriately tested with adequate results.*)

**2b3. Measure Exclusions.** (*Exclusions were supported by the clinical evidence in 1c or appropriately tested with results demonstrating the need to specify them.*)

**2b3.1 Data/Sample for analysis of exclusions** (*Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included*):  
Our method excludes patients for the following reasons:

- Patient discharged deceased – Only patients discharged alive are at risk for readmission. Including those who died before discharge introduces bias to a calculated readmit rate.
- Discharges without a valid patient identifier or hospital identifier – Valid patient and hospital identifiers are required to identify a readmission and required to assign the readmission to the responsible facility.
- Discharges with discharge date missing or invalid – Without a valid discharge date the 30 day readmit window cannot be calculated.
- Discharges for Mental Health and/or Substance Abuse – Mental Health and Substance claims are underrepresented in UnitedHealthcare's inpatient claims dataset (those data reside on different systems), therefore we are unable to develop appropriate RRCs and RRC Factors.

**2b3.2 Analytic Method** (*Describe type of analysis and rationale for examining exclusions, including exclusion related to patient preference*):  
N/A – no analysis required.

**2b3.3 Results** (*Provide statistical results for analysis of exclusions, e.g., frequency, variability, sensitivity analyses*):  
N/A – no analysis required.

**2b4. Risk Adjustment Strategy.** *(For outcome measures, adjustment for differences in case mix (severity) across measured entities was appropriately tested with adequate results.)*

**2b4.1 Data/Sample** *(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included):*

N/A – This measure itself is a risk adjuster.

**2b4.2 Analytic Method** *(Describe methods and rationale for development and testing of risk model or risk stratification including selection of factors/variables):*

N/A

**2b4.3 Testing Results** *(Statistical risk model: Provide quantitative assessment of relative contribution of model risk factors; risk model performance metrics including cross-validation discrimination and calibration statistics, calibration curve and risk decile plot, and assessment of adequacy in the context of norms for risk models. Risk stratification: Provide quantitative assessment of relationship of risk factors to the outcome and differences in outcomes among the strata):*

N/A

**2b4.4 If outcome or resource use measure is not risk adjusted, provide rationale and analyses to justify lack of adjustment:** N/A

**2b5. Identification of Meaningful Differences in Performance.** *(The performance measure scores were appropriately analyzed and discriminated meaningful differences in quality.)*

**2b5.1 Data/Sample** *(Describe the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included):*

See validity testing section above.

**2b5.2 Analytic Method** *(Describe methods and rationale to identify statistically significant and practically/meaningfully differences in performance):*

See validity testing section above.

**2b5.3 Results** *(Provide measure performance results/scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningful differences in performance):*

See validity testing section above.

**2b6. Comparability of Multiple Data Sources/Methods.** *(If specified for more than one data source, the various approaches result in comparable scores.)*

**2b6.1 Data/Sample** *(Describe the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included):*

Comparability testing using additional sources of data has not yet been performed.

**2b6.2 Analytic Method** *(Describe methods and rationale for testing comparability of scores produced by the different data sources specified in the measure):*

Comparability testing using additional sources of data has not yet been performed.

**2b6.3 Testing Results** *(Provide statistical results, e.g., correlation statistics, comparison of rankings; assessment of adequacy in the context of norms for the test conducted):*

Comparability testing using additional sources of data has not yet been performed.

**2c. Disparities in Care:** H M L I NA *(If applicable, the measure specifications allow identification of disparities.)*

**2c.1 If measure is stratified for disparities, provide stratified results** *(Scores by stratified categories/cohorts):* N/A



**2c.2 If disparities have been reported/identified (e.g., in 1b), but measure is not specified to detect disparities, please explain:**

N/A

**2.1-2.3 Supplemental Testing Methodology Information:**

URL

[http://www.uhc.com/live/uhc\\_com/Assets/Documents/Supplemental\\_Testing\\_Methodology\\_Exhibits.ppt](http://www.uhc.com/live/uhc_com/Assets/Documents/Supplemental_Testing_Methodology_Exhibits.ppt)

**Steering Committee: Overall, was the criterion, *Scientific Acceptability of Measure Properties*, met? (Reliability and Validity must be rated moderate or high) Yes ☒ No ☐**

**Provide rationale based on specific subcriteria:**

**If the Committee votes No, STOP**

### 3. USABILITY

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making. (**evaluation criteria**)

**C.1 Intended Actual/Planned Use** (Check all the planned uses for which the measure is intended):

Payment Program, Public Reporting, Quality Improvement (Internal to the specific organization)

**3.1 Current Use** (Check all that apply; for any that are checked, provide the specific program information in the following questions): Public Reporting, Payment Program, Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Quality Improvement (Internal to the specific organization)

**3a. Usefulness for Public Reporting: H ☒ M ☒ L ☐ I ☐**

(The measure is meaningful, understandable and useful for public reporting.)

**3a.1. Use in Public Reporting - disclosure of performance results to the public at large** (If used in a public reporting program, provide name of program(s), locations, Web page URL(s)). If not publicly reported in a national or community program, state the reason AND plans to achieve public reporting, potential reporting programs or commitments, and timeline, e.g., within 3 years of endorsement: **[For Maintenance – If not publicly reported, describe progress made toward achieving disclosure of performance results to the public at large and expected date for public reporting; provide rationale why continued endorsement should be considered.]**

We publicly report a readmission measure (based on the original NQF endorsed measure ) in our CA Physician Group Quality Index.

[https://www.uhcwest.com/vgn/images/portal/cit\\_60701/600740036\\_Quality\\_Index\\_2010.pdf](https://www.uhcwest.com/vgn/images/portal/cit_60701/600740036_Quality_Index_2010.pdf).

We are planning to use the proposed readmission measure to do public reporting within 3 years.

**3a.2. Provide a rationale for why the measure performance results are meaningful, understandable, and useful for public reporting.** If usefulness was demonstrated (e.g., focus group, cognitive testing), describe the data, method, and results: There are several reasons why the Risk-Adjusted 30 day All-Cause Readmit Rate is useful and meaningful:

- 1) Calculation of the measure required minimal data inputs. The methodology is easy to understand and use.
- 2) When used for performance analysis, it allows users to make valid hospital to hospital comparisons

or comparisons of hospital performance over time because case mix differences are removed. For example, hospitals with high chemotherapy volumes may then be compared more meaningfully with other hospitals without the adverse impact of the high actual rate of scheduled or planned chemotherapy readmissions.

3) The population for which this measure can be used is wide, allowing for the measurement population to include children and obstetric discharges.

4) This measure can be used in hospital Electronic Health Record (EHR) systems and the RRC factors can be used in real time with patients who are still in the hospital.

**3.2 Use for other Accountability Functions (payment, certification, accreditation).** If used in a public accountability program, provide name of program(s), locations, Web page URL(s): The current NQF-endorsed measure is used in UnitedHealthcare's Performance-based contracting (PBC) programs which reimburse hospitals and large physician groups such as FQHC's based on their performance in quality, outcome, and efficiency. The risk-adjusted 30-day readmission rate is one measure of the program. We also use this measure in Accountable Care Organization (ACO) pilots and Patient-centered Medical Homes.

**3b. Usefulness for Quality Improvement: H ● M ● L ● I ●**

(The measure is meaningful, understandable and useful for quality improvement.)

**3b.1. Use in QI.** If used in quality improvement program, provide name of program(s), locations, Web page URL(s):

**[For Maintenance – If not used for QI, indicate the reasons and describe progress toward using performance results for improvement].**

A risk-adjusted 30-day readmission rate is a Key Performance Indicator for our Medical Management Program. UnitedHealthcare's Enhanced Discharge Management program incorporates peer-reviewed findings of improved quality and cost outcomes as published by Boston University's Re-Engineered Discharge program (RED) and Northwestern University's Better Outcomes for Older adults through Safe Transitions program (BOOST). This has been a major initiative of UnitedHealthcare and is responsible for the development of hospital-specific programs which have reduced 30-day readmissions by 6-7% annually.

The current NQF-endorsed measure is used in our CA physician group Quality Improvement program. The plan-physician joint committee meets regularly to review quality, outcome, and utilization measure results to identify areas for improvement

In our Hospital Performance-based Contracting program, we share readmission results with hospitals on the regular basis. The goal of readmission data sharing is to open a dialogue between UnitedHealthcare and hospital staff to improve inpatient quality and ultimately the readmission rate. Our purpose in sharing our readmission data is to help facilitate appropriate hospital organizational changes.

The California Integrated Healthcare Association has adopted the current NQF-endorsed measure as part of its Value-based Pay for Performance program, so 7 health plans and over 200 physician groups have agreed to use this measure as well to measure appropriate use of services, and quality and cost outcomes.

**3b.2. Provide rationale for why the measure performance results are meaningful, understandable, and useful for quality improvement.** If usefulness was demonstrated (e.g., QI initiative), describe the data, method and results:

see answer to 3a.2

**Overall, to what extent was the criterion, Usability, met? H ● M ● L ● I ●**

**Provide rationale based on specific subcriteria:**

## 4. FEASIBILITY

Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement. **(evaluation criteria)**

**4a. Data Generated as a Byproduct of Care Processes: H ☐ M ☒ L ☐ I ☐**

**4a.1-2 How are the data elements needed to compute measure scores generated?** *(Check all that apply).*

Data used in the measure are:

Coded by someone other than person obtaining original information (e.g., DRG, ICD-9 codes on claims)

**4b. Electronic Sources: H ☐ M ☒ L ☐ I ☐**

**4b.1 Are the data elements needed for the measure as specified available electronically** *(Elements that are needed to compute measure scores are in defined, computer-readable fields):* ALL data elements are in a combination of electronic sources

**4b.2 If ALL data elements are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources:**

**4c. Susceptibility to Inaccuracies, Errors, or Unintended Consequences: H ☐ M ☒ L ☐ I ☐**

**4c.1 Identify susceptibility to inaccuracies, errors, or unintended consequences of the measurement identified during testing and/or operational use and strategies to prevent, minimize, or detect. If audited, provide results:**

Accurate measurement requires:

1. Valid admission date and discharge date
2. Ability to case-group interim bills into one complete
3. Reliable patient identifiers
4. Complete and accurate diagnosis and procedure
5. Accurate hospital identifiers if hospital-level performance assessment is desired

Depending on the level of inaccuracy, unreliable or incomplete codes may lead to error.

**4d. Data Collection Strategy/Implementation: H ☐ M ☒ L ☐ I ☐**

**A.2 Please check if either of the following apply** *(regarding proprietary measures):* Proprietary measure

**4d.1 Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues** *(e.g., fees for use of proprietary measures):*

For data collection, the completeness and accuracy of inpatient claims data are checked during claims adjudication process. Critical fields such as facility identifier, patient identifier, diagnosis code, procedure codes, revenue code, admission date and discharge date are present and valid. Another pre-process of the claims data before running the modeling is to create inpatient confinements from multiple claims to make sure interim bills are grouped together into one inpatient confinement.

**Overall, to what extent was the criterion, *Feasibility*, met?** H ☐ M ☒ L ☐ I ☐  
Provide rationale based on specific subcriteria:

**OVERALL SUITABILITY FOR ENDORSEMENT**

**Does the measure meet all the NQF criteria for endorsement?** Yes ☐ No ☒

**Rationale:**

**If the Committee votes No, STOP.**

**If the Committee votes Yes, the final recommendation is contingent on comparison to related and**

**competing measures.**

## 5. COMPARISON TO RELATED AND COMPETING MEASURES

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure before a final recommendation is made.

**5.1 If there are related measures (either same measure focus or target population) or competing measures (both the same measure focus and same target population), list the NQF # and title of all related and/or competing measures:**

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

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

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

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

### 5a. Harmonization

**5a.1 If this measure has EITHER the same measure focus OR the same target population as NQF-endorsed measure(s): Are the measure specifications completely harmonized?** No

**5a.2 If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden:**

This measure is superior to its competing measures listed above in following areas - 1. It focuses on both commercial and Medicare population as compared to CMS's Medicare population only, 2) . It measures all condition and all-cause readmission as compared to a specific condition or procedure of the competing measures – CHF, AMI, Pneumonia, PCI, 3) As a result of the above two advantages, the measure results will have much larger impact on improving care quality and safety of patients and reduce health care cost.

### 5b. Competing Measure(s)

**5b.1 If this measure has both the same measure focus and the same target population as NQF-endorsed measure(s):**

**Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible):**

There are not any competing measures that we are aware of at this moment.

## CONTACT INFORMATION

**Co.1 Measure Steward (Intellectual Property Owner):** United Health Group, 5995 Plaza Drive, Mailstop CA112-0533, Cypress, California, 90630

**Co.2 Point of Contact:** Sam, Ho, MD, sam.ho@UHC.com, 714-226-6879-

**Co.3 Measure Developer if different from Measure Steward:** UnitedHealth Group, 5995 Plaza Drive, Mailstop CA112-0533, Cypress, California, 90630

**Co.4 Point of Contact:** Sam, Ho, MD, sam.ho@UHC.com, 714-226-6879-

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| <b>Co.5 Submitter:</b> Sam, Ho, sam.ho@UHC.com, 714-226-6879-, United Health Group               |
| <b>Co.6 Additional organizations that sponsored/participated in measure development:</b><br>None |
| <b>Co.7 Public Contact:</b> Sam, Ho, MD, sam.ho@UHC.com, 714-226-6879-, UnitedHealth Group       |

## ADDITIONAL INFORMATION

### Workgroup/Expert Panel involved in measure development

#### Ad.1 Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.

Ron Stettler, MBA, VP of Healthcare Economics, UnitedHealthcare - Lead Methodologist;  
Mara Rubin, MHS, VP of Healthcare Economics, Lead developer;  
Cynthia R. Forry, MA, MHA, FACHE, Director, Healthcare Economics, Developer;  
Randall J. Geitner, MS, Director, Healthcare Economics, Developer;  
Duncan C. Macrae, Ph.D., Associate Director, Healthcare Economics, Reviewer;  
Ranyan Lu, Ph.D., MBA, Director of Research, Clinical Analytics-Health Services, Consultant and Methodologist.

**Ad.2 If adapted, provide title of original measure, NQF # if endorsed, and measure steward. Briefly describe the reasons for adapting the original measure and any work with the original measure steward:** The original measure endorsed by NQF was 0329: All-Cause Readmission Index (risk adjusted). The measure steward is Sam Ho, MD, UnitedHealth Group. We are proposing changing our risk adjustment methodology from logistic regression using CMS's DRG grouper to direct standardization using Readmission Risk Categories, which we developed from AHRQ Diagnostic and Procedure Categories. Further we are changing from determining the probability of readmission to determining and applying readmission risk factors. The benefits of changes include

1. This new risk adjustment methodology is more transparent and easy to understand and use. Users do not have to run the CMS drg grouper but instead can use a code lookup based only on age band (65 and over or under 65), diagnosis and procedure, regardless of whether the cases are Commercial or Medicare patients. DRG is not directly related to the risk of readmission. On the other hand, excellent results are achieved using Readmission Risk Categories based on diagnosis and procedure with a split for age.
2. When used for performance analysis, it helps make hospital to hospital comparisons (or comparisons from year to year for the same hospital) more meaningful because case mix differences are removed by applying the adjustment factor. For example, hospitals with high chemotherapy volumes may then be compared more meaningfully with other hospitals without the adverse impact of the high actual rate of scheduled or planned chemotherapy readmissions.
3. The population for which this measure can be used is wider, allowing for the measurement population to include children and obstetric discharges.
4. This measure can be used in hospital Electronic Health Record (EHR) systems.

### Measure Developer/Steward Updates and Ongoing Maintenance

**Ad.3 Year the measure was first released:** 2008

**Ad.4 Month and Year of most recent revision:** 06, 2008

**Ad.5 What is your frequency for review/update of this measure?** Annual update

**Ad.6 When is the next scheduled review/update for this measure?** 06, 2012

**Ad.7 Copyright statement:**

**Ad.8 Disclaimers:**



**Ad.9 Additional Information/Comments:** [UnitedHealth Group is willing to share the Risk Category code file with other users in various data formats upon request.](#)

**Date of Submission (MM/DD/YY):** 10/04/2011