



## Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to subcriterion 1b).

### Brief Measure Information

**NQF #: 2496**

**De.2. Measure Title:** Standardized Readmission Ratio (SRR) for dialysis facilities

**Co.1.1. Measure Steward:** Centers for Medicare & Medicaid Services

**De.3. Brief Description of Measure:** The Standardized Readmission Ratio (SRR) is defined to be the ratio of the number of index discharges from acute care hospitals that resulted in an unplanned readmission to an acute care hospital within 30 days of discharge for Medicare-covered dialysis patients treated at a particular dialysis facility to the number of readmissions that would be expected given the discharging hospitals and the characteristics of the patients as well as the national norm for dialysis facilities. Note that in this document, "hospital" always refers to acute care hospital.

**1b.1. Developer Rationale:** Unplanned readmission rates are an important indicator of patient morbidity and quality of life. On average, dialysis patients are admitted to the hospital nearly twice a year and hospitalizations account for approximately 38 percent of total Medicare expenditures for dialysis patients (U.S. Renal Data System, 2012). In 2010, more than 30% of dialysis patient discharges from an all-cause hospitalization were followed by an unplanned readmission within 30 days (U.S. Renal Data System, 2012). Measures of the frequency of unplanned readmissions, such as SRR, help efforts to control escalating medical costs, play an important role in providing cost-effective health care, and support coordination of care across inpatient and outpatient settings: discharge planning, transition, and follow-up care.

Studies have shown that pre- and post-discharge interventions may reduce admission and unplanned readmission rates. A variety of studies on non-ESRD populations that evaluated post-discharge interventions (Dunn 1994; Bostrom 1996; Dudas 2001; Azevedo 2002; Coleman 2004; Coleman 2006; Balaban 2008; Braun 2009) or a combination of pre- and post-discharge interventions (Naylor 1994; McDonald 2001; Creason 2001; Ahmed 2004; Anderson 2005; Jack 2009; Koehler 2009; Parry 2009) have indicated a reduction in the risk of unplanned readmissions to various degrees. In addition, a recent study in the ESRD population found that certain postdischarge assessments and changes in treatment at the dialysis facility may be associated with a reduced risk of readmission (Chan 2009). Altogether, these studies support the potential for modifying unplanned readmission rates with interventions performed prior to and immediately following patient discharge.

Ahmed A, Thornton P, Perry GJ, Allman RM, DeLong JF. Impact of atrial fibrillation on mortality and readmission in older adults hospitalized with heart failure. *Eur J Heart Fail.* 2004;6(4):421–426.

Anderson MA, Clarke MM, Helms LB, Foreman MD. Hospital readmission from home health care before and after prospective payment. *J Nurs Scholarsh.* 2005;37(1):73–79.

Azevedo A, Pimenta J, Dias P, Bettencourt P, Ferreira A, Cerqueira-Gomes M. Effect of a heart failure clinic on survival and hospital readmission in patients discharged from acute hospital care. *Eur J Heart Fail.* 2002 Jun;4(3):353–359.

Balaban RB, Weissman JS, Samuel PA, Woolhandler S. Redefining and redesigning hospital discharge to enhance patient care: a randomized controlled study. *J Gen Intern Med.* 2008;23(8):1228–1233.

Bostrom J, Caldwell J, McGuire K, Everson D. Telephone follow-up after discharge from the hospital: Does it make a difference? *Appl Nurs Res.* 1996;9:47–52.

Braun E, Baidusi A, Alroy G, Azzam ZS. Telephone follow-up improves patients satisfaction following hospital discharge. *Eur J Internal Med.* 2009;20:221–225.

Chan K, Lazarus M, Wingard R, et al. "Association between repeat hospitalization and early intervention in dialysis patients following hospital discharge." *Kidney International* (2009) 76:331-41.

Coleman E, Parry C, Chalmers S, et al. The care transitions intervention. *Arch Internal Med.* 2006;166:1822–1828.

Creason H. Congestive heart failure telemanagement clinic. *Lippencotts Case Management: Managing the Process of Patient Care.* 2001 Jul-Aug;6(4):146-56.

Dudas V, Bookwalter T, Kerr KM et al. The impact of follow-up telephone calls to patients after hospitalization. *American Journal of Medicine.* 2001; 111(9B):265-305

Dunn JM, Elliot TB, Lavy JA et al. Outpatient clinic review after arterial reconstruction: is it necessary? *Annals of the Royal College of Surgeons of England.* 1994 Sep;76(5):304-6.

Jack B, Chetty V, Anthony D, et al. "A reengineered hospital discharge program to decrease rehospitalization." *Annals of Internal Medicine* (2009) 150:178-88.

Koehler BE, Richter KM, Youngblood L et al. Reduction of 30-day postdischarge hospital readmission or emergency department (ED) visit rates in high-risk elderly medical patients through delivery of a targeted care bundle. *Journal of Hospital Medicine.* 2009 Apr;4(4):211-8.

McDonald, MD. The hospitalist movement: wise or wishful thinking? *Nurse management.* 2001 Mar;32(3):30-1.

Naylor M, Brooten D, Jones R et al. Comprehensive discharge planning for the hospitalized elderly. A randomized clinical trial. *Annals of Internal Medicine.* 1994 Jun 15;120(12):999-1006.

Parry C, Min SH, Chugh A et al. Further application of the care transitions intervention: results of a randomized controlled trial conducted in a fee-for-service setting. *Home Health Care Services Quarterly.* 2009;28(2-3):84-99.

**S.4. Numerator Statement:** Each facility's observed number of hospital discharges that are followed by an unplanned hospital readmission within 30 days of discharge

**S.7. Denominator Statement:** The expected number of unplanned readmissions in each facility, which is derived from a model that accounts for patient characteristics and discharging acute care hospitals.

**S.10. Denominator Exclusions:** Hospital discharges that:

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

**De.1. Measure Type:** Outcome

**S.23. Data Source:** Administrative claims

**S.26. Level of Analysis:** Facility

**IF Endorsement Maintenance – Original Endorsement Date:** Dec 23, 2014 **Most Recent Endorsement Date:** Jun 29, 2015

**IF this measure is included in a composite, NQF Composite#/title:**

**IF this measure is paired/grouped, NQF#/title:**

**De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?** It is our view that the SRR should be considered in conjunction with the Standardized Hospitalization Ratio (SHR; NQF #1463). These two measures present two different aspects of facilities' hospitalization use, both of which are important. The SHR gives a measure of hospitalization rates with reference to the totality of patients being served by a given facility. The SRR on the

other hand uses as a denominator the number of hospital admissions for the given facility. A facility that has a very low SHR, corresponding to low hospitalization rates together with a high SRR suggests the facility is managing patients well overall, but there appear to be some potential problems with transitions of care, such as hospital discharges. Alternatively, a facility might have a high SHR and a low SRR, indicating that there is an overall high utilization of hospital resources, but that the process of care after a discharge seems effective at reducing readmissions.

Another advantage of pairing these measures is that the SHR adjusts for comorbidities at incidence of ESRD, whereas the SRR is able to utilize information on more recent comorbidities (for example, from the index hospitalization) because its denominator is index hospitalizations rather than patients.

## 1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. **Measures must be judged to meet all subcriteria to pass this criterion and be evaluated against the remaining criteria.**

### 1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

[Evidence\\_Submission\\_Form\\_for\\_NQF\\_submission-635271975057774771.pdf](#)

### 1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- disparities in care across population groups.

#### 1b.1. Briefly explain the rationale for this measure (e.g., the benefits or improvements in quality envisioned by use of this measure)

Unplanned readmission rates are an important indicator of patient morbidity and quality of life. On average, dialysis patients are admitted to the hospital nearly twice a year and hospitalizations account for approximately 38 percent of total Medicare expenditures for dialysis patients (U.S. Renal Data System, 2012). In 2010, more than 30% of dialysis patient discharges from an all-cause hospitalization were followed by an unplanned readmission within 30 days (U.S. Renal Data System, 2012). Measures of the frequency of unplanned readmissions, such as SRR, help efforts to control escalating medical costs, play an important role in providing cost-effective health care, and support coordination of care across inpatient and outpatient settings: discharge planning, transition, and follow-up care.

Studies have shown that pre- and post-discharge interventions may reduce admission and unplanned readmission rates. A variety of studies on non-ESRD populations that evaluated post-discharge interventions (Dunn 1994; Bostrom 1996; Dudas 2001; Azevedo 2002; Coleman 2004; Coleman 2006; Balaban 2008; Braun 2009) or a combination of pre- and post-discharge interventions (Naylor 1994; McDonald 2001; Creason 2001; Ahmed 2004; Anderson 2005; Jack 2009; Koehler 2009; Parry 2009) have indicated a reduction in the risk of unplanned readmissions to various degrees. In addition, a recent study in the ESRD population found that certain postdischarge assessments and changes in treatment at the dialysis facility may be associated with a reduced risk of readmission (Chan 2009). Altogether, these studies support the potential for modifying unplanned readmission rates with interventions performed prior to and immediately following patient discharge.

Ahmed A, Thornton P, Perry GJ, Allman RM, DeLong JF. Impact of atrial fibrillation on mortality and readmission in older adults hospitalized with heart failure. *Eur J Heart Fail.* 2004;6(4):421–426.

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Balaban RB, Weissman JS, Samuel PA, Woolhandler S. Redefining and redesigning hospital discharge to enhance patient care: a randomized controlled study. *J Gen Intern Med.* 2008;23(8):1228–1233.

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Braun E, Baidusi A, Alroy G, Azzam ZS. Telephone follow-up improves patients satisfaction following hospital discharge. Eur J Internal Med. 2009;20:221–225.

Chan K, Lazarus M, Wingard R, et al. “Association between repeat hospitalization and early intervention in dialysis patients following hospital discharge.” Kidney International (2009) 76:331-41.

Coleman E, Parry C, Chalmers S, et al. The care transitions intervention. Arch Internal Med. 2006;166:1822–1828.

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Dudas V, Bookwalter T, Kerr KM et al. The impact of follow-up telephone calls to patients after hospitalization. American Journal of Medicine. 2001; 111(9B):265-305

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Parry C, Min SH, Chugh A et al. Further application of the care transitions intervention: results of a randomized controlled trial conducted in a fee-for-service setting. Home Health Care Services Quarterly. 2009;28(2-3):84-99.

**1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis.** *(This is required for endorsement maintenance. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included). This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.*

N/A

**1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.**

N/A

**1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability.** *(This is required for endorsement maintenance. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the subcriterion on improvement (4b.1) under Usability and Use.*

Investigations of the SRR by Hispanic ethnicity indicate relatively little variation and no substantial disparities; however, analyses do show some difference between black and non-black patients (SRR = 1.07 v. 1.03, respectively). Differences by sex were also small among the studied cohort. These results are similar to those reported by USRDS [1] As discussed further below, we adjust for sex in the measure development but do not adjust for race, which is consistent with the NQF guidelines[2].

1. Gilbertson D, Collins A, Foley R. Readmission Rates in the CKD Population. PowerPoint presentation developed on behalf of the US Renal Data System from the 2011 Annual Data Report. 2012.

2. National Quality Forum. Measure Evaluation Criteria. Available at: [http://www.qualityforum.org/docs/measure\\_evaluation\\_criteria.aspx](http://www.qualityforum.org/docs/measure_evaluation_criteria.aspx). Accessed December 6, 2012.

**1b.5. If no or limited data on disparities from the measure as specified is reported in 1b4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations.**

N/A

**1c. High Priority** (previously referred to as High Impact)

The measure addresses:

- a specific national health goal/priority identified by DHHS or the National Priorities Partnership convened by NQF; OR
- a demonstrated high-priority (high-impact) aspect of healthcare (e.g., affects large numbers of patients and/or has a substantial impact for a smaller population; leading cause of morbidity/mortality; high resource use (current and/or future); severity of illness; and severity of patient/societal consequences of poor quality).

**1c.1. Demonstrated high priority aspect of healthcare**

Affects large numbers, High resource use

**1c.2. If Other:**

**1c.3. Provide epidemiologic or resource use data that demonstrates the measure addresses a high priority aspect of healthcare.**

**List citations in 1c.4.**

The Standardized Readmission Ratio (SRR) is a facility-level measure that applies to large numbers of dialysis patients. At the end of 2010 there were 593,086 patients being dialyzed, of whom 116,946 were new (incident) ESRD patients.[1] The SRR measures potentially poor or incomplete quality of care among the dialysis population, reflecting an aspect of care that is especially resource intensive. In 2010, the total Medicare cost for the ESRD program tallies \$33 billion, an 8% increase from 2009.[1] In particular, hospitalization costs for ESRD patients are high, with Medicare costs of more than \$12 billion in 2010. Throughout this document, “hospitalizations” refers to inpatient services, and “hospitals” refers to acute care hospitals.

Hospitalization and readmission rates are two important indicators of dialysis patient morbidity and quality of life. In 2010, dialysis patients were admitted to the hospital twice on average and spent an average of 12 days in the hospital, accounting for approximately 38% of Medicare expenditures for ESRD patients.[1] Furthermore, a significant percentage (30%)[2] of ESRD patients discharged from the hospital have an unplanned readmission within 30 days. In the non-ESRD population, clinical studies have demonstrated that improved care coordination and discharge planning may reduce readmission rates. Some studies[3] also confirm that a sizable portion of unplanned readmissions are preventable. Hence, a systematic measure on unplanned readmissions is essential for controlling escalating medical costs in that it can identify potential problems and help facilities to provide cost-effective health care. Hospitalization measures have been in use in the Dialysis Facility Reports (DFRs) since 1995, whereas a measure of 30-day readmission was added to the same report in 2011. Dialysis facilities and ESRD Networks use the DFRs for quality improvement, and ESRD state surveyors use the reports for monitoring and surveillance of dialysis facilities.

**1c.4. Citations for data demonstrating high priority provided in 1a.3**

1. U S Renal Data System, USRDS 2012 Annual Data Report: Atlas of Chronic Kidney Disease and End-Stage Renal Disease in the United States, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2012.
2. Arbor Research Collaborative for Health & the University of Michigan Kidney Epidemiology and Cost Center. Unpublished analyses of 2009 Medicare claims.
3. Goldfield NI, McCullough EC, Hughes JS, et al. Identifying potentially preventable readmissions. Health Care Financ Rev. 2008;30:75–91.

**1c.5. If a PRO-PM (e.g. HRQoL/functional status, symptom/burden, experience with care, health-related behaviors), provide evidence that the target population values the measured PRO and finds it meaningful. (Describe how and from whom their input was obtained.)**

N/A

## 2. Reliability and 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. **Measures must be judged to meet the subcriteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

**2a.1. Specifications** The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

**De.5. Subject/Topic Area** (check all the areas that apply):

Prevention, Renal, Renal : End Stage Renal Disease (ESRD)

**De.6. Cross Cutting Areas** (check all the areas that apply):

Care Coordination, Care Coordination : Readmissions, Safety : Readmissions

**S.1. Measure-specific Web Page** (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

**S.2a. If this is an eMeasure**, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

This is not an eMeasure Attachment:

**S.2b. Data Dictionary, Code Table, or Value Sets** (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

No data dictionary Attachment:

**S.3. For endorsement maintenance**, please briefly describe any changes to the measure specifications since last endorsement date and explain the reasons.

**S.4. Numerator Statement** (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome)

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

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

**S.5. Time Period for Data** (What is the time period in which data will be aggregated for the measure, e.g., 12 mo, 3 years, look back to August for flu vaccination? Note if there are different time periods for the numerator and denominator.)

Within 30 days of discharge date

**S.6. 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, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm.

Hospitalizations are counted as events in the numerator if they met the definition of unplanned readmission that (a) occurred within 30 days of a hospital discharge and (b) was not preceded by a “planned” readmission that also occurred within 30 days of discharge. In summary, a readmission is considered “planned” under two scenarios [1]:

1. The patient undergoes a procedure that is always considered planned (e.g., bone marrow transplant) or has a primary diagnosis that always indicates the hospitalization is planned (e.g., maintenance chemotherapy).

2. The patient undergoes a procedure that MAY be considered planned if it is not accompanied by an acute diagnosis. For example, a hospitalization involving a heart valve procedure accompanied by a primary diagnosis of diabetes would be considered planned,

whereas a hospitalization involving a heart valve procedure accompanied by a primary diagnosis of acute myocardial infarction (AMI) would be considered unplanned.

1. Centers for Medicaid and Medicare Services. Hospital Quality Initiative: Measure Methodology website. "Planned Readmission Algorithm" [ZIP file]. Available at: <http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Measure-Methodology.html>. Accessed February 3, 2014.

**S.7. Denominator Statement** (Brief, narrative description of the target population being measured)

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

**S.8. Target Population Category** (Check all the populations for which the measure is specified and tested if any):

Populations at Risk

**S.9. Denominator Details** (All information required to identify and calculate the target population/denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

All Medicare live discharges of dialysis patients from a hospital in a calendar year are considered eligible for this measure. We calculate the expected number of unplanned readmissions by fitting a model with random effects for discharging hospitals, fixed effects for facilities and regression adjustments for a set of patient-level characteristics, including measures of patient comorbidities. The expectation for the given facility is computed assuming readmission rates corresponding to an "average" facility with the same patient characteristics and same discharging hospitals as this facility. Model details are provided in the Risk Standardization section below.

**S.10. Denominator Exclusions** (Brief narrative description of exclusions from the target population)

Hospital discharges that:

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

**S.11. Denominator Exclusion Details** (All information required to identify and calculate exclusions from the denominator such as definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

Death in hospital/within 30 days of discharge: We determine a patient's death date from his/her Death Notification Form (CMS Form 2746) and the Social Security Death Master File.

- Discharged against medical advice: We determine discharge status from the inpatient claim.
- Certain diagnoses: The primary diagnosis at discharge is available on the inpatient claim; we group these diagnoses into more general categories using AHRQ's Clinical Classification Software (CCS; see <http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp> for descriptions of each CCS). The excluded CCSs are shown below.  
Cancer: 42, 19, 45, 44, 17, 38, 39, 14, 40, 35, 16, 13, 29, 15, 18, 12, 11, 27, 33, 32, 24, 43, 25, 36, 21, 41, 20, 23, 26, 28, 34, 37, 22, 31, 30

Psychiatric: 657, 659, 651, 670, 654, 650, 658, 652, 656, 655, 662

Rehab for prosthesis: 254

- Number of unplanned admissions: We remove any records for a patient after his/her 12th unplanned admission in the calendar year.

PPS-exempt cancer hospitals: The following hospitals are listed as PPS-exempt cancer hospitals in the Federal Register (<http://www.gpo.gov/fdsys/pkg/FR-2011-07-18/html/2011-16949.htm>): 050146, 050660, 100079, 100271, 220162, 330154, 330354, 360242, 390196, 450076, 500138

- Same-day transfers: We determine same-day transfers using the hospital ID and date of discharge and date of next admission available in the inpatient claims data.

**S.12. Stratification Details/Variables** (All information required to stratify the measure results including the stratification variables, definitions, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b)

N/A

**S.13. Risk Adjustment Type** (Select type. Provide specifications for risk stratification in S.12 and for statistical model in S.14-15)

Statistical risk model

If other:

**S.14. Identify the statistical risk model method and variables** (Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development and testing should be addressed with measure testing under Scientific Acceptability)

We use a two-stage model, the first of which is a double random-effects logistic regression model. In this model, both dialysis facilities and hospitals are represented as random effects, and regression adjustments are made for a set of patient-level characteristics. From this model, we obtain the estimated standard deviation of the random effects of hospitals.

The second model is a mixed-effects logistic regression model, in which facilities are fixed effects and hospitals are modeled as random effects, with the standard deviation specified as equal to its estimates from the first model. The expected number of readmissions for each facility is estimated as the summation of the probabilities of readmission of all patients in this facility and assuming the national norm for facility effect. This model accounts for a given facility's case mix using the same set of patient-level characteristics as those in the first model.

**S.15. Detailed risk model specifications** (must be in attached data dictionary/code list Excel or csv file. Also indicate if available at measure-specific URL identified in S.1.)

Note: Risk model details (including coefficients, equations, codes with descriptors, definitions), should be provided on a separate worksheet in the suggested format in the Excel or csv file with data dictionary/code lists at S.2b.

Provided in response box S.15a

**S.15a. Detailed risk model specifications** (if not provided in excel or csv file at S.2b)

See Appendix (specifications contain special characters that could not be entered in this text field or excel file).

**S.16. Type of score:**

Ratio

If other:

**S.17. 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

**S.18. 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.)

1. Identify target hospitalizations:

a. Identify all Medicare-covered inpatient hospitalizations for dialysis patients that ended on or after January 1 of the measure year and began before January 31 of the following year. Note that the discharges occurring between January 1-31 of the following year are kept only as potential readmissions, to be identified in the construction of the sample; no discharges in this period are considered index discharges.

b. Exclude any hospitalizations occurring at non-acute hospitals (e.g., those from long-term care or rehabilitation hospitals).

c. Classify each hospitalization as planned or unplanned, using the algorithm developed for CMS' Hospital-Wide Readmission (HWR) measure

2. Identify index discharges as all discharges from Step 1, except those meeting one of the following criteria:

a. those ending in the next calendar year

b. for patients who died during the hospitalization (because there was no opportunity for readmission);

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

d. that ended in a transfer to another acute care facility (for patients who are transferred between one acute care hospital and another, the measures consider these multiple contiguous hospitalizations as a single acute episode of care, and readmission for

transferred patients is attributed to the hospital that ultimately discharges the patient to a non-acute care setting);  
e. that took place at Prospective Payment System (PPS)-exempt cancer hospitals;  
f. that occur after a patient's 12th hospital admission in the time period; and  
g. where the patient was admitted for medical treatment of cancer, primary psychiatric diagnoses or rehabilitation.  
3. Classify each index discharge in Step 2 according to whether it was followed within 30-days by an unplanned readmission:  
a. For each index discharge in Step 2, find the first admission among the hospitalizations in Step 1 that occurred within 30 days of the index discharge date.  
b. If no admission is identified AND the patient died within 30 days of the index discharge date then the index discharge is excluded.  
c. If the admission identified was unplanned, then the index discharge is classified as having a readmission.  
d. If no admission is identified (and not excluded in 3b) OR the admission identified was planned, then the index discharge is classified as not having a readmission  
4. Identify final set of index discharges for analysis as those from Step 3 with the following additional exclusion:  
a. Exclude index discharges to facilities with fewer than 10 index discharges in the time period.  
5. Bring on all ICD-9 diagnoses for the patient in the year preceding the respective discharge; group each diagnosis into CMS' Hierarchical Condition Categories. These diagnoses are identified from institutional claims (inpatient, outpatient, home health, hospice and skilled nursing facility).  
6. Using a two-stage modeling process (see Appendix), calculate each facility's expected rate of readmission by regressing the probability of unplanned readmission within 30 days on a set of risk factors:  
a. Fixed effect for dialysis facility receiving discharged patient  
b. Random effect for hospital discharging the patient  
c. Sex  
d. Age  
e. Years on dialysis  
f. Diabetes as cause of ESRD  
g. BMI at incidence of ESRD  
h. Length (days) of index hospitalization  
i. Past-year comorbidities (grouped into CCs)  
j. Discharged with high-risk condition (grouped into AHRQ CCSs)  
The facility-level measure is then calculated as the ratio of its actual readmission events to its expected number of readmission events. The measure is standardized in relation to the national median readmission rate.

**S.19. Calculation Algorithm/Measure Logic Diagram URL or Attachment** (You also may provide a diagram of the Calculation Algorithm/Measure Logic described above at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1) Available in attached appendix at A.1

**S.20. Sampling** (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

IF a PRO-PM, identify whether (and how) proxy responses are allowed.

N/A

**S.21. Survey/Patient-reported data** (If measure is based on a survey, provide instructions for conducting the survey and guidance on minimum response rate.)

IF a PRO-PM, specify calculation of response rates to be reported with performance measure results.

N/A

**S.22. Missing data** (specify how missing data are handled, e.g., imputation, delete case.)

Required for Composites and PRO-PMs.

N/A

**S.23. Data Source** (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.24.

Administrative claims

**S.24. Data Source or Collection Instrument** (Identify the specific data source/data collection instrument e.g. name of database, clinical registry, collection instrument, etc.)

IF a PRO-PM, identify the specific PROM(s); and standard methods, modes, and languages of administration.

Data are derived from an extensive national ESRD patient database, which is currently based on the Standard Information Management System (SIMS) database maintained by the 18 ESRD Networks, the CMS Annual Facility Survey (Form CMS-2744), Medicare dialysis and hospital payment records, the CMS Medical Evidence Form (Form CMS-2728), transplant data from the Organ Procurement and Transplant Network (OPTN), the Death Notification Form (Form CMS-2746), the Nursing Home Minimum Dataset, and the Social Security Death Master File. The database is comprehensive for Medicare-covered ESRD patients. Information on hospitalizations is obtained from Medicare Inpatient Claims Standard Analysis Files (SAFs) and past-year comorbidity is obtained from multiple types (inpatient, outpatient institutional, physician/supplier, home health, hospice, skilled nursing facility claims) of Medicare Claims Standard Analysis Files (SAFs).

<http://www.cms.gov/Manuals/IOM/itemdetail.asp?filterType=none&filterByDID=-99&sortByDID=1&sortOrder=ascending&itemID=CMS018912>

**S.25. Data Source or Collection Instrument** (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

**S.26. Level of Analysis** (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)  
Facility

**S.27. Care Setting** (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)  
Dialysis Facility  
If other:

**S.28. COMPOSITE Performance Measure** - Additional Specifications (Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)  
N/A

**2a. Reliability** – See attached Measure Testing Submission Form  
**2b. Validity** – See attached Measure Testing Submission Form  
[Measure\\_Testing\\_Form\\_for\\_NQF\\_Submission-635271976453992671.pdf](#)

### 3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

#### 3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

##### 3a.1. Data Elements Generated as Byproduct of Care Processes.

Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score)

If other:

#### 3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

**3b.1. To what extent are the specified data elements available electronically in defined fields?** (i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields)

ALL data elements are in defined fields in electronic claims

**3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.**

**3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL.**

**Attachment:**

**3c. Data Collection Strategy**

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

**3c.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.**

**IF a PRO-PM, consider implications for both individuals providing PROM data (patients, service recipients, respondents) and those whose performance is being measured.**

As data are derived from administrative databases, there is no additional data collection required and the questions about sampling, availability, cost, etc., are not applicable. There is a lag of approximately nine months needed to collect the hospital data through the CMS claims data files.

**3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm).**

N/A

**4. Usability and Use**

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

**4a. Accountability and Transparency**

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

**4.1. Current and Planned Use**

*NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.*

Planned	Current Use (for current use provide URL)
Public Reporting	
Payment Program	
Regulatory and Accreditation Programs	
Quality Improvement with Benchmarking (external benchmarking to multiple organizations)	
Quality Improvement (Internal to the specific organization)	

**4a.1. For each CURRENT use, checked above, provide:**

- Name of program and sponsor

- Purpose
- Geographic area and number and percentage of accountable entities and patients included

**4a.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons?** (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)

Implementation in a public reporting program for ESRD typically requires NQF endorsement. The measure developer is currently conducting a Dry Run of the measure, in accordance with the MMS CMS Measures Management System (MMS) Blueprint. Results of this Dry Run will be available in late June.

**4a.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement.** (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)

The measure developer is currently conducting a Dry Run of the readmission measure, in accordance with the MMS Blueprint. Plans for implementation will be dependent on the results of the Dry Run.

#### **4b. Improvement**

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

**4b.1. Progress on Improvement. (Not required for initial endorsement unless available.)**

Performance results on this measure (current and over time) should be provided in 1b.2 and 1b.4. Discuss:

- Progress (trends in performance results, number and percentage of people receiving high-quality healthcare)
- Geographic area and number and percentage of accountable entities and patients included

N/A

**4b.2. If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.**

N/A

#### **4c. Unintended Consequences**

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

**4c.1. Were any unintended negative consequences to individuals or populations identified during testing; OR has evidence of unintended negative consequences to individuals or populations been reported since implementation? If so, identify the negative unintended consequences and describe how benefits outweigh them or actions taken to mitigate them.**

N/A

### **5. Comparison to Related or 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.

#### **5. Relation to Other NQF-endorsed Measures**

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

Yes

**5.1a. List of related or competing measures (selected from NQF-endorsed measures)**

0369 : Dialysis Facility Risk-adjusted Standardized Mortality Ratio

1463 : Standardized Hospitalization Ratio for Admissions

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

**5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.**

**5a. Harmonization**

The measure specifications are harmonized with related measures;

**OR**

The differences in specifications are justified

**5a.1. If this measure conceptually addresses 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.**

The proposed SRR applies to the same population—Medicare-covered ESRD patients—as CMS’ Standardized Hospitalization Ratio for Admissions (NQF #1463) and Standardized Mortality Ratio (NQF #0369). Both measures adjust for a similar set of patient characteristics as the SRR and utilize fixed effects in their modeling approach. Harmonization with other measures that are specific to the ESRD population is important because the same stakeholders are interpreting and using the measures. The proposed SRR has the same measure focus—unplanned 30-day readmissions—as CMS’ Hospital-Wide All-Cause Readmission Rate (NQF #1789). Differences between the SRR and the existing CMS measure: Exclusions 1) SRR does not exclude patients with incomplete claims history from the past year. 2) SRR excludes discharges that follow a patient’s 12th admission in the year. 3) SRR excludes from the numerator readmissions that include a diagnosis of “fluid and electrolyte disorders” (CCS 55) and meet other criteria for planned readmissions (see Appendix). Risk Adjustment 1) SRR does not adjust for comorbidities that are highly prevalent in the ESRD population, such as acute renal failure, dialysis status, kidney transplant, fluid/electrolyte disorders, and iron deficiency 2) SRR additionally adjusts for diagnoses (grouped by the Clinical Classification Software [CCS] method) that are relatively rare but have a high risk of 30-day readmission in the ESRD population, length of hospital stay, diabetes as the primary cause of ESRD, time on dialysis, and sex.

**5b. Competing Measures**

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

**OR**

Multiple measures are justified.

**5b.1. If this measure conceptually addresses 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.)**

N/A

**Appendix**

**A.1 Supplemental materials may be provided in an appendix.** All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

[Attachment](#) **Attachment:** [Appendix.pdf](#)

**Contact Information**

**Co.1 Measure Steward (Intellectual Property Owner):** [Centers for Medicare & Medicaid Services](#)

**Co.2 Point of Contact:** [Corette, Byrd, MMSSupport@Battelle.org](mailto:Corette.Byrd@Battelle.org), 202-786-1158-  
**Co.3 Measure Developer if different from Measure Steward:** [University of Michigan Kidney Epidemiology and Cost Center](#)  
**Co.4 Point of Contact:** [Casey, Parrotte, parrotte@med.umich.edu](mailto:Casey.Parrotte@med.umich.edu), 734-763-6611-

### Additional Information

**Ad.1 Workgroup/Expert Panel involved in measure development**

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

The following TEP members served an advisory role to CMS during the development process:

[Brady Augustine: Aggressive Analytics, Inc](#)  
[Steven Brunelli, MD MSCE: Independent Consultant](#)  
[Paul Eggers, PhD \(non-voting member\): NIDDK, National Institutes of Health](#)  
[Stephen Jencks, MD MPH: Independent Consultant](#)  
[Richard Knight: American Association of Kidney Patients](#)  
[Christopher Lovell, RN MSN CNN: Dialysis Clinic, Inc](#)  
[Frank Maddux, MD FACP: Fresenius Medical Care](#)  
[Allen Nissenson, MD FACP FASN FNKF: DaVita, Inc](#)  
[Paul Palevsky, MD: University of Pittsburgh School of Medicine](#)  
[Sharon Perlman, MD: All Children's Hospital](#)  
[Daniel Weiner, MD MS: Tufts University School of Medicine](#)  
[Jay Wish, MD: University Hospitals Case Medical Center](#)

**Measure Developer/Steward Updates and Ongoing Maintenance**

**Ad.2 Year the measure was first released:** [2014](#)

**Ad.3 Month and Year of most recent revision:** [02, 2014](#)

**Ad.4 What is your frequency for review/update of this measure?** [Annually](#)

**Ad.5 When is the next scheduled review/update for this measure?** [07, 2015](#)

**Ad.6 Copyright statement:**

**Ad.7 Disclaimers:**

**Ad.8 Additional Information/Comments:**