Measure Information Form

1. Measure Name/Title (CMS Consensus-Based Entity [CBE] Measure Submission Form, Measure Specifications sp.01)

Standardized Ratio of Emergency Department Encounters Occurring Within 30 Days of Hospital Discharge (ED30) for Dialysis Facilities

2. Descriptive Information

2.1 Measure Type

- ☐ process
- ☒ outcome
- ☐ PRO-PM
- ☐ cost /resource use
- ☐ efficiency
- ☐ structure
- ☐ intermediate outcome
- ☐ population health
- ☐ composite
  - ☐ process
  - ☐ outcome
  - ☐ other
- ☐ other

2.2 Brief Description of Measure (CMS CBE Measure Submission Form, Measure Specifications sp.02 and sp.06)

The Standardized Ratio of Emergency Department Encounters Occurring Within 30 Days of Hospital Discharge for Dialysis Facilities (ED30) is defined to be the ratio of observed over expected events. The numerator is the observed number of index discharges from acute care hospitals that are followed by an outpatient emergency department encounter within 4-30 days after discharge for eligible adult Medicare dialysis patients treated at a particular dialysis facility. The denominator is the expected number of index discharges followed by an ED encounter within 4-30 days given the discharging hospital's characteristics, characteristics of the dialysis facility's patients, and the national norm for dialysis facilities. Note that in this document, acute care hospital includes critical access hospitals and "emergency department encounter" always refers to an outpatient encounter that does not end in a hospital admission. This measure is calculated as a ratio but can also be expressed as a rate.

When used for public reporting, the measure calculation will be restricted to facilities with 11 eligible index discharges in the reporting year. This restriction is required to ensure patients cannot be identified due to small cell size.

2.3 If Paired or Grouped (CMS CBE Measure Submission Form, Measure Specifications sp.03)

N/A

3. Measure Specifications

3.1 Measure-Specific Webpage (CMS CBE Measure Submission Form, Measure Specifications sp.09)

N/A

3.2 If this is an electronic clinical quality measure (eCQM) (CMS CBE Measure Submission Form, Measure Specifications sp.10)

N/A

3.3 Data Dictionary, Code Table, or Value Sets (CMS CBE Measure Submission Form, Measure Specifications sp.11)

ED30_Data_Dictionary_Code_Table.xlsx

3.4 For an instrument-based measure (CMS CBE Measure Submission Form, Measure Specifications sp.23 and sp.24)

N/A

3.5 Updates since last submission (CMS CBE Measure Submission Form, Specifications: Maintenance Update spma.01 and spma.02)

N/A

3.6 Numerator Statement (CMS CBE Measure Submission Form, Measure Specifications sp.12)

The observed number of index hospital discharges during a year that are followed by an emergency department encounter within 4–30 days of the discharge among eligible adult Medicare patients at a facility.

3.7 Numerator Details (CMS CBE Measure Submission Form, Measure Specifications sp.13)

Index Discharges

We use Medicare inpatient hospital claims to identify acute hospital discharges. Among these acute hospital discharges, all live discharges of eligible patients in a calendar year are considered eligible for this measure. Those that do not meet one of the index discharge exclusion criteria described in the next section are considered index discharges.

Assignment of Index Discharges to Facilities

Index discharges are attributed to the facility of record on the day of discharge for the patient. That is, if the patient transfers dialysis facilities at the time of hospital discharge, it is the new facility that is assigned the index discharge.

Emergency Department Encounters

Emergency department (ED) encounters are identified from Medicare outpatient claims using revenue center codes that indicate an ED visit (0450, 0451, 0452, 0453, 0454, 0455, 0456, 0457, 0458, 0459, 0981). Note that this means that we include both outpatient ED visits and those that result in an observation stay, but not those that result in a hospital admission. Outpatient ED claims that have overlapping or consecutive dates of service are combined and considered as a single ED encounter. To further ensure that these outpatient ED encounters are distinct from those associated with hospitalizations, we exclude ED encounters where there is an inpatient claim that has dates of service included in any of the same time period covered by the ED encounter.

An ED encounter "follows" the index discharge only if there is no intervening inpatient hospitalization. In other words, if after hospital discharge there is another inpatient hospitalization and then an ED encounter within the time frame the original index discharge is not counted as having been followed by an ED encounter. If eligible, the second hospitalization could become a new index discharge. The measure does not count the number of ED encounters after each index discharge, but instead determines whether or not there is at least one such encounter. If there are multiple ED encounters during days 4-30 after an index discharge, only the first ED encounter during that time is relevant to determining whether or not the index discharge is counted as having been followed by an ED encounter. ED encounters that occur before the 4th day after index discharge are not considered.

The 4-30 day time frame was selected to harmonize with the Standardized Readmission Ratio (NQF #2496) that also uses the same time period after an index hospitalization. This time interval was selected in response to providers and stakeholders concerns that there may be up to 72 hours before a patient is seen at the facility after hospital discharge.

The time period for the measure calculation is two calendar years, meaning that index discharges must occur during the two calendar year period. The subsequent ED encounters may occur during the calendar years or the first 30 days of the following calendar year.

3.8 Denominator Statement (CMS CBE Measure Submission Form, Measure Specifications sp.14)

The expected number of index hospital discharges for eligible adult Medicare ESRD dialysis patients during the two year period that are followed by an emergency department encounter within 4-30 days of the discharge among eligible patients at a facility. The expected value is the result of a risk-adjusted predictive model adjusted for the characteristics of the patients, the dialysis facility, and the discharging hospitals.

3.9 Denominator Details (CMS CBE Measure Submission Form, Measure Specifications sp.15)

We use Medicare inpatient hospital claims to identify acute hospital discharges. Among these acute hospital discharges, all live discharges of eligible patients in a calendar year are considered eligible for this measure. See Numerator Details section above for definitions index discharges, patients assignment, and ED encounters.

General Inclusion Criteria for Dialysis Patients

To be eligible for the measure a patient must be an adult (aged 18 or more) Medicare dialysis patient with at least 90 days of ESRD treatment on date of index discharge. The 90 days of ESRD are counted without regard to which facility, or the number of facilities, a patient received their dialysis treatments. The date of index discharge is considered day 0 when identifying ED visits within 4-30 days of discharge.

Expected Calculation

We calculate each dialysis facility's expected number of index hospital discharges during the two year period that are followed by an ED encounter within 4-30 days of the discharge. The expected number is calculated by fitting a model with random effects for discharging hospitals, fixed effects for facilities, and regression adjustments for a set of patient-level characteristics. We compute the expectation for the given facility assuming ED encounter rates corresponding to an "average" facility with the same patient characteristics and same discharging hospitals as this facility. Model details are provided in the testing form.

3.10 Denominator Exclusions (CMS CBE Includes "Exception" in the "Exclusion" Field) (CMS CBE Measure Submission Form, Measure Specifications sp.16)

Index Discharge exclusions that are implicit in the denominator definition include discharges for which the patient:

- Has Medicare Advantage coverage at the time of the index discharge
- Has had ESRD for 90 days or less at time of discharge
- Is less than 18 years of age at the time of discharge

We also exclude discharges and emergency department encounters for which the patient was:

- Actively enrolled in hospice at any time of during the calendar month of the discharge date or ED encounter admit date

Outpatient Medicare claims are the source of ED encounter data, and since outpatient claims are not available for Medicare Advantage (MA) patients, we cannot identify ED encounters for MA patients. Therefore, we exclude index discharges for patients with MA at the time of discharge.

The hospice exclusion is needed because hospice patients are considered to be under the purview of hospice care givers and may have other reasons for Emergency Department use such as pain management.

Additionally we exclude hospital discharges that:

- Do not result in a live discharge
- Are against medical advice
- Include a primary diagnosis for cancer, mental health or rehabilitation (see below for excluded CCSs)
- Are from a PPS-exempt cancer hospital
- Are followed within three days of discharge by the patient being transplanted, discontinuing dialysis, recovering renal function, being lost to follow-up, having another hospitalization, or having an emergency department visit

3.11 Denominator Exclusion Details (CMS CBE Includes "Exception" in the "Exclusion" Field) (CMS CBE Measure Submission Form, Measure Specifications sp.17)

- Death in hospital: We determine a patient's death date from a number of sources: CMS Medicare Enrollment Database, CMS forms 2746 and 2728, OPTN transplant follow-up form, CROWNWeb database, Social Security Death Master File, and Inpatient Claims. In addition, if the discharge status on the index discharge claim indicates death and the death date occurs within 5 days after discharge we consider this a death in the hospital.
- 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 for a primary diagnosis for cancer, mental health or rehabilitation 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
- 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
- Are followed within three days of discharge by the patient being transplanted, discontinuing dialysis, recovering renal function, being lost to follow-up, having another hospitalization, or having an emergency department visit. We determine transplant status from OPTN, CROWNWeb, and dialysis claims, and discontinuation of dialysis or recovery of renal function from CROWNWeb.

3.12 Stratification Details/Variables (CMS CBE Measure Submission Form, Measure Specifications sp.18)

N/A

3.13 Risk Adjustment Type (CMS CBE Measure Submission Form, Measure Specifications sp.19)

☐ no risk adjustment or risk stratification
☐ stratification by risk category/subgroup
☒ statistical risk model
☐ other

The model accounts for a set of patient-level characteristics:

- Sex: Determine each patient's sex from multiple sources.
- Age at Index Discharge: Determined from the birth date provided in EQRS, Medicare Claims, and the Medical Evidence Form (CMS-2728). Five age groups were defined (18-24, 25-44, 45-59, 60-74, and 75+).
- Years on dialysis: Determined using the first service date from patient's Medical Evidence Form (CMS-2728), claims history (all claim types with evidence of dialysis), EQRS, and Dialysis Facility Measures the SRTR database.
- Diabetes as cause of ESRD: Primary cause of ESRD determined from patient's Medical Evidence Form (CMS-2728) and EQRS. When primary cause of ESRD is missing, we assume diabetes is not the cause of ESRD.
- Nursing Home status: Uses multiple sources* including the CMS Nursing Home MDS. Determine each patient's nursing home status in previous 365 days and categorize as none (0 days), short-term nursing home (0-89 days), or long-term nursing home (>=90 days) at time of index hospitalization discharge.
- BMI at incidence: Calculated based on the height and weight provided on patient's Medical Evidence Form (CMS-2728) and group patients into the following categories:

BMI < 18.5, 18.5 ≤ BMI < 25, 25 ≤ BMI < 30, or BMI ≥ 30. BMI is imputed to the BMI ≥ 30 category when either missing, or outside the range of 10 to 70 for adults.
Length (days) of index hospitalization: Each hospitalization's length is determined by taking the difference between the date of admission and the date of discharge available on the inpatient claim. For patients who are transferred between one acute care hospital and another, the measure considers these multiple contiguous hospitalizations as a single acute episode of care, and the length is calculated by taking the difference between the date of admission for the first hospitalization and the date of discharge from the last hospitalization included. Time in the hospital is included as a categorical variable based on quartiles (1 variable for each quartile).

- Past-year comorbidities (risk variables): Determined by identifying unique ICD-10 diagnosis codes for each patient reported on Medicare claims in the 365 days preceding (and inclusive of) the index discharge date. Diagnosis codes are grouped using 66 comorbidity groups defined by the 2019.1 version of the Agency for Healthcare Research and Quality Clinical Classifications Software (AHRQ CCS). See table 1 for a list of AHRQ categories included.

3.14 Type of Score (CMS CBE Measure Submission Form, Measure Specifications sp.20)

☐ count
☐ rate/proportion
☒ ratio
☐ categorical (e.g., yes or no)
☐ continuous variable (CV) (e.g., an average)
☐ composite/scale
☐ other (specify) Click or tap here to enter text.

3.15 Interpretation of Score (CMS CBE Measure Submission Form, Measure Specifications sp.21)

Better quality = Lower score

3.16 Calculation Algorithm/Measure Logic (CMS CBE Measure Submission Form, Measure Specifications sp.22)

See Flowchart in Appendix.

3.17 Sampling (CMS CBE Measure Submission Form, Measure Specifications sp.25 and sp.26)

N/A

3.18 Survey/Patient-Reported Data (CMS CBE Measure Submission Form, Measure Specifications sp.27)

N/A

3.19 Data Source (CMS CBE Measure Submission Form, Measure Specifications sp.28)

☒ administrative data
☒ claims data
☐ paper patient medical records
☐ electronic patient medical records
☐ electronic clinical data
☒ registries
☐ standardized patient assessments
☐ patient-reported data and surveys
☐ non-medical data
☐ other—describe in 3.20 (CMS CBE Measure Submission Form, Measure Specifications sp.29)

3.20 Data Source or Collection Instrument (CMS CBE Measure Submission Form, Measure Specifications sp.29)

Data are derived from an extensive national ESRD patient database, which is primarily based on EQRS facility-reported clinical and administrative data (including CMS-2728 Medical Evidence Form, CMS-2746 Death Notification Form, and CMS-2744 Annual Facility Survey Form and patient tracking data), the Renal Management Information System (REMIS), the Medicare EDB, and Medicare claims data. In addition, the database includes transplant data from the SRTR, and data from the Nursing Home MDS, the Quality Improvement Evaluation System (QIES) Business Intelligence Center (QBIC) (which includes Provider and Survey and Certification data from Automated Survey Processing Environment [ASPEN]), and the Dialysis Facility Compare (DFC).

The database is comprehensive for Medicare patients not enrolled in MA. MA patients are included in all sources, but their Medicare payment records are limited to inpatient claims. Non-Medicare patients are included in all sources except for the Medicare payment records. Tracking by dialysis provider and treatment modality is available for all patients including those with only partial or no Medicare coverage.

Information on hospitalizations is obtained from Part A Medicare Inpatient Claims SAFs, and past-year comorbidity data are obtained from multiple Part A types (inpatient, home health, hospice, skilled nursing facility claims) and Part B (outpatient) claims.

3.21 Data Source or Collection Instrument (Reference) (CMS CBE Measure Submission Form, Measure Specifications sp.30)

N/A

3.22 Level of Analysis (CMS CBE Measure Submission Form, Measure Specifications sp.07)

- ☐ individual clinician
- ☐ group/practice
- ☒ hospital/facility/agency
- ☐ health plan
- ☐ accountable care organization
- ☐ geographic population
- ☐ other (specify) Click or tap here to enter text.

3.23 Care Setting (CMS CBE Measure Submission Form, Measure Specifications sp.08)

- ☐ ambulatory surgery center
- ☐ clinician office/clinic
- ☐ outpatient rehabilitation
- ☐ urgent care – ambulatory
- ☐ behavioral health: inpatient
- ☐ behavioral health: outpatient
- ☒ dialysis facility
- ☐ emergency medical services/ambulance
- ☐ emergency department
- ☐ home health
- ☐ hospice
- ☐ hospital
- ☐ hospital: critical care
- ☐ hospital: acute care facility
- ☐ imaging facility
- ☐ laboratory
- ☐ pharmacy
- ☐ nursing home/skilled nursing facility (SNF)
- ☐ inpatient rehabilitation facility (IRF)
- ☐ long-term acute care
- ☐ birthing center
- ☐ no applicable care setting
- ☐ other (specify) Click or tap here to enter text.

3.24 Composite Measure (CMS CBE Composite Measure Submission Form, Measure Specifications sp.30)

N/A