CBE ID

3566

Title

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

Project

Cost and Efficiency

Endorsement Status

Endorsed

Is Under Review

Yes

Next Maintenance Cycle

Spring 2026

Previous Endorsement Cycle

Spring 2020

Initial Endorsement

Fri, 11/20/2020 - 05:29

Steward

Centers for Medicare & Medicaid Services

1.0 New or Maintenance

Maintenance

1.1 Measure Structure

Single Measure

1.3 Electronic Clinical Quality Measure (eCQM)

No

1.6 Measure Description

The Standardized Ratio of Emergency Department Encounters Occurring Within 30 Days of Hospital Discharge for Dialysis Facilities (ED30) is the ratio of the observed number of index hospital discharges that are followed by an emergency department encounter within 30 days for adult Medicare dialysis patients treated at a particular facility to the number of ED encounters that would be expected given the characteristics of the dialysis facility's patients and the national event rate for dialysis facilities. The time period for the measure calculation is two years. Medicare patients include those with traditional Fee for Service (FFS) Medicare and those with Medicare Advantage. Note that for this measure an "ED encounter" always refers to an outpatient

encounter that does not end in a hospital admission, but does include observation stays. This measure is calculated as a ratio but can also be expressed as a rate.

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1.6a Material Specification Change(s)

Yes

1.6b Summary of Specification Changes

Since the previous endorsement cycle, we have made the following changes:

1. Denominator: the measure now includes Medicare Advantage (MA) patients that had previously been excluded due to lack of outpatient claims data.
2. Risk Adjustment: the measure includes Medicare Advantage status at the time of index discharge as a covariate in the risk adjustment model.

1.7 Measure Type

Outcome

1.8 Level of Analysis

Facility

1.9 Care Setting

Other

1.9b Other Care Setting

Dialysis Facility

1.10 Measure Rationale

Emergency department encounters within 30 days of an index discharge are an important indicator of care coordination, care transitions, and quality of life. In the general population, studies have shown higher risk of an emergency department encounter subsequent to a discharge from an inpatient hospitalization or an outpatient emergency department encounter[1]. This has been demonstrated in the end-stage kidney disease (ESRD) population as well with 27% of patients being treated in an ED within 30 days of hospital discharge, most frequently for congestive heart failure [2].

More than half (55.0%) of all patients with ESRD visit the ED during their first year of dialysis, and patients with ESRD have a mean of 2.7 ED visits per patient-year [4]. This rate is 6-fold higher

than the national mean rates for US adults in the general population [4]. Furthermore, the Lovasik study notes that among Medicare beneficiaries with ESRD, 30% of hospital admissions that originate in the ED are for diagnoses that are often dialysis related such as complications of vascular access, congestive heart failure/fluid overload, septicemia, and hyperkalemia. A study by Zhang and colleagues [5] reported that rates of ED visits among patients on thrice weekly in-center hemodialysis vary by dialysis schedule (Mon/Weds/Fri; Tues/Thurs/Sat) and by day of week. For example, the ED visit rate (without hospital admission) was highest on the day following the longer interdialytic interval over the weekend (Mondays), suggesting an association with facility structure and treatment schedule.

Cohen and colleagues [6] reported that missed dialysis treatments are associated with an over two-fold higher risk of an ED visit, suggesting an opportunity for dialysis facilities to establish or strengthen facility practices that can help to reduce skipped treatments through increased communication, care coordination, and patient education. This in turn has the potential to reduce avoidable ED visits.

The CMS Centers for Medicare and Medicaid Innovation's Comprehensive End Stage Renal Disease (ESRD) Care model emphasizes care coordination as a central feature of care delivery in order to reduce utilization and improve outcomes. During the second performance year, the original Wave 1 cohort of ESCOs (ESRD Seamless Care Organizations) experienced about a 3% reduction in ED use relative to the period before the CEC model was launched [7].

As reported by the USRDS, the unadjusted ED visit among HD patients (Medicare Advantage and FFS) remained relatively stable with around 1.2 – 1.5 visits per patient-year, and from 0.8 to 1.1 per patient-year for PD patients [3]. Measures of the frequency of ED encounters subsequent to a hospital discharge may help dialysis facility efforts to prevent emergent unscheduled care and to help control escalating medical costs, for example through greater care coordination and post-discharge transitional care. Specifically, dialysis facility activities such as evaluation of patient target weight or medication reconciliation and review may help reduce the risk of ED encounters after hospital discharge. This measure complements existing measures targeting care coordination (such as the Standardized Readmission Ratio) by identifying impactful events that can be influenced by dialysis facility care.

Inclusion of Medicare Advantage Patients

Legislative changes that became effective in January 2021 removed barriers that had previously prevented ESRD patients from enrolling in Medicare Advantage (MA) plans. In the subsequent years, there have been a substantial increase in the number of ESRD beneficiaries covered by MA

plans, now approaching 45% of the dialysis population. Unlike FFS beneficiaries, MA outpatient encounters and administrative records had not been readily available for analyzing facility quality, and so MA patients had been excluded from the previously endorsed version of this measure. With the recent availability of Part C Medicare Advantage encounter data, MA patients can now be included in this measure. Adjustment for MA coverage is important in order to control for potential difference in outcomes related to coverage type since there is wide variation in the frequency of MA patients at the dialysis facility level. In addition, our internal analyses indicate that MA patients have significantly higher rates of ED encounters compared to FFS patients.

While the currently endorsed version of this measure does not include MA patients, this submission includes MA patients by: (1) incorporating Part C outpatient encounter data to identify ED visits for MA patients, (2) addition of all prevalent comorbidity from Part C encounter data in comorbidity adjustment, and (3) adjusts for MA coverage by including a time dependent covariate.

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1.13 Data Dictionary

Attached

1.13a Attach Data Dictionary

ED30_DataDictionary_Final.xlsx

1.14 Numerator

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

1.14a Numerator Details

Index Discharges

We use Medicare Part A inpatient claims to identify acute hospital discharges. This source includes inpatient claims for Medicare FFS patients and shadow claims for Medicare Advantage patients (Part C claims are not included). 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 FSS and Medicare Advantage 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) 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 two calendar years or the first 30 days of the following calendar year. The first 30-days of the following calendar year is needed to have a complete lookback period for ED encounters occurring 4-30 days after an index discharge in the prior month of December of the second calendar year.

1.15 Denominator

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

1.15a Denominator Details

We use Medicare Part A inpatient claims to identify acute hospital discharges. This source includes inpatient claims for Medicare FFS patients and shadow claims for Medicare Advantage patients (Part C claims are not included). 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 of index discharges, patient 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 more than 90 days of ESRD treatment on date of index discharge. This minimum 90-day period assures that patients are eligible for Medicare, either as their primary or secondary insurer, and that follow-up is complete. Thus, the measure excludes ED encounters during the first 90 days of ESRD as well as patients who die or recover kidney function during that time period. The 90 days of ESRD are counted without regard to which facility, or the number of facilities, where 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.

In order to assure completeness of information on ED encounters for all patients included in the analysis, we restrict to Medicare patients who are either enrolled in Medicare Advantage or who reach a certain threshold of Medicare outpatient dialysis and inpatient claims indicating that Medicare is the primary payor. Specifically, months within a given dialysis patient-period are used for the calculation when the patient is enrolled in Medicare Advantage or meets the criterion of being within two months after a month with either: (a) $1200+ of Medicare dialysis claims OR (b) at least one Medicare inpatient claim.

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 subsequent sections.

1.15b Denominator Exclusions

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

- Has had ESRD for 90 days or less at time of discharge
- Is less than 18 years of age at the time of discharge
- Non-Medicare primary insurance 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 during the calendar month of the discharge date or ED

encounter admit date. 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.

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 kidney function, being lost to follow-up, having another hospitalization, or having an emergency department visit

1.15c Denominator Exclusions Details

- Death in hospital: We determine a patient's death date from a number of sources including CMS Medicare Enrollment Database, CMS form 2746, OPTN transplant follow-up form, EQRS 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 kidney function, being lost to follow-up, having another hospitalization, or having an emergency department visit. We determine transplant status from OPTN, EQRS, and dialysis claims, and discontinuation of dialysis or recovery of kidney function from EQRS.

1.15d Age Group

Adults (18-64 years), Older Adults (65 years and older)

1.16 Type of Score

Ratio

1.17 Measure Score Interpretation

Better performance = Lower score

1.18 Calculation of Measure Score

The numerator for a facility is the observed number of hospital discharges followed by an ED encounter within 30 days of discharge. The denominator for the same facility is the expected number of hospital discharges followed by an ED encounter with 30 days adjusted for the characteristics of the patients, the dialysis facility, and the discharging hospitals. The measure for a given facility is calculated by dividing the numerator by the denominator.

See **ED30_Flowchart_Final_508.pdf** attached to 1.18a for more details.

1.18a Attach measure score calculation diagram

ED30_Flowchart_Final_508.pdf

1.19 Measure Stratification Details

Not applicable for this measure

1.20 Types of Data Sources

Administrative Data, Claims Data, Registries

1.21a Data Collection Tool URL(s)

http://example.com

1.25 Data Source Details

Data are derived from the EQRS patient-specific clinical and administrative data, including ESRD patient list, CMS-2728 Medical Evidence Form, CMS-2746 Death Notification Form, and patient admission and discharge data, from all Medicare certified dialysis facilities, the Medicare Enrollment Database (EDB), and Medicare claims data.

In addition, the database includes transplant data from the Scientific Registry of Transplant Recipients (SRTR), data from the Nursing Home Minimum Dataset, and the provider and survey and certification data from the Internet Quality Improvement and Evaluation System (iQIES) data.

Information on hospitalizations is obtained from Medicare inpatient and skilled nursing claims Standard Analysis Files (SAFs), and past-year comorbidity data are obtained from multiple claim

types (inpatient, home health, hospice (Part A only), skilled nursing facility claims).

Fee-for-service (FFS) Medicare Part A (inpatient) and Part B (outpatient and physician supply) claims for dialysis patients are included in the current database; additionally, the database now incorporates Part C Medicare Advantage (MA) data for the MA enrollees. This database ensures that hospital, outpatient dialysis, and other billable services under Medicare – whether FFS or MA – are captured.

1.26 Minimum Sample Size

There is not a minimum sample size needed to calculate the performance score. Public reporting of this measure on DFCC would be restricted to facilities with at least 11 eligible index discharges to ensure stable estimates and for the measure to comply with restrictions on reporting of potentially identifiable patient information related to small cell size.

2.1 Attach Logic Model

ED30-Logic-Model_Final_508.pdf

2.2 Evidence of Measure Importance

Among Medicare beneficiaries, 30% of hospital admissions that originate in the ED are for diagnoses that are often dialysis related such as complications of vascular access, congestive heart failure/fluid overload, septicemia, and hyperkalemia [1]. Recent research points to many additional opportunities to further reduce unnecessary ED use in this population. Programs developed to impact dialysis provider practices have been shown to improve intermediate outcomes (reduced catheter vascular access [3], small solute adequacy, anemia management volume overload [1], hospitalization, and mortality. Post-hospitalization transition care management can be effective in reducing return visits to the ED by focusing on evaluation of target weight and fluid balance, medication reconciliation, and assistance in post-hospitalization follow up [12].

Cohen and colleagues [9] reported that missed dialysis treatments are associated with an over two-fold higher risk of an ED visit, suggesting an opportunity for dialysis facilities to establish or strengthen facility practices that can help to reduce skipped treatments through increased communication, care coordination, and patient education. This, in turn, has the potential to reduce avoidable ED visits. Given the association between missed dialysis treatments and increased risk of an ED visit [4], dialysis facility interventions that improve person-centered care and adherence to the treatment schedule would be expected to decrease ED utilization. Other interventions, such as telehealth, have been demonstrated to reduce ED utilization in high-risk dialysis patients [5].

Zhang and colleagues [10] reported that rates of ED visits among patients on thrice weekly in-

center hemodialysis vary by dialysis schedule (Mon/Weds/Fri; Tues/Thurs/Sat) and by day of week. For example, the ED visit rate (without hospital admission) was highest on the day following the longer interdialytic interval over the weekend (Mondays), suggesting an association with facility structure and treatment schedule.

In the general population, outpatient ED visits were reported to have increased more slowly for Medicare patients being treated by patient-centered medical home practices when compared to non-patient-centered medical homes [6]. PCMH provide comprehensive care and treat all the patient's clinical and mental and health issues; rely on care coordination across providers and provide expanded access to care around the clock (AHRQ; https://www.ahrq.gov/ncepcr/research/care-coordination/pcmh/define.html). A comparable, promising example that may reduce ED use among ESRD dialysis patients is the prior CMS Centers for Medicare and Medicaid Innovation's Comprehensive End Stage Renal Disease (ESRD) Care model that emphasized care coordination as a central feature of care delivery in order to reduce utilization and improve outcomes. During the second performance year, the original Wave 1 cohort of ESCOs (ESRD Seamless Care Organizations) experienced about a 3% reduction in ED use relative to the period before the CEC model was launched [11].

Finally, low health literacy has been associated with increased use of ED services [7] and some studies have indicated that patient education interventions can reduce ED utilization [8].

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2.4 Performance Gap

Data for Table 1 are from the data described in 1.25 for the years 2022-2023. The total number of dialysis facilities included in the performance scores was 7,927, and the total number of index discharges was 801,844.

Table 1. Performance Scores by Decile

See **ED30_Table 1_508.pdf** attached to 2.4a for table and text for this question

2.4a Attach Performance Gap Results

ED30_Table-1_508.pdf

2.6 Meaningfulness to Target Population

During the 2015 ED Technical Expert Panel (TEP) which included 3 patient members, some TEP members cited care fragmentation and lack of ownership over patient outcomes that often occur within the U.S. health care system contribute to avoidable ED use. They noted that many dialysis patients rely heavily on their nephrologists (versus primary care physicians) for more comprehensive as well as primary care due to their frequent interactions as part of the regular dialysis treatment schedule. There was agreement that better communication among providers including the dialysis facility is needed to avoid preventable ED visits.

The TEP agreed that ED encounters that do not result in admission are not well monitored as a quality indicator. Panelists recommended both the development of a measure of overall ED use that did not result in an admission along with a measure focused on ED visits occurring shortly after an inpatient discharge. The ED30 measure would provide facilities with a more complete picture of their performance on key clinical outcomes of mortality, hospitalization, readmission, and ED usage.

3.1 Contributions Towards Closing Care Gaps

This domain is optional for the Spring 2026 cycle.

4.1a Data Structure and Availability

All the data incorporated into our database come from structured data. Data collection for this measure is accomplished via data sources including EQRS, a web-based and electronic batch submission platform maintained and operated by CMS contractors, Medicare Claims, and other supplemental data sources (see Section 1.25 Data Source Details). Publicly reported measures like this one are reviewed on a regular basis by dialysis facility providers and rare instances of inaccurate or missing data are present (based on comments received during facility previews). For this measure maintenance submission, Medicare Advantage patients are now being included in the measure through the addition of Medicare Advantage Part C encounter data.

4.1b Implementation Costs and Burden

As the data required for this measure are already part of routine data collection, no additional costs or burden are anticipated.

4.1c Confidentiality

Public reporting of this measure on DFCC would be restricted to facilities with at least 11 eligible index discharges to comply with restrictions on reporting of potentially identifiable patient information.

4.3 Feasibility Informed Final Measure

No feasibility challenges have been identified that resulted in a change to the measure. Changes to the measure were made to include Medicare Advantage patients that had previously been excluded and do not affect the feasibility profile.

4.4 Proprietary Information

Not a proprietary measure and no proprietary components

5.1.1 Data Used for Testing

Data are derived from an extensive national ESRD patient database explained in more detail in question 1.25, encompassing the years 2022 - 2023.

5.1.1a Dates of Testing Data

January-December 2022 - 2023

5.1.2 Differences in Data

None

5.1.3 Characteristics of Measured Entities

See Section 7.1 Supplemental Attachment for **ED30_5.1.3_Final_508.pdf**, which contains the table and text for this question

5.1.4 Characteristics of Units of the Eligible Population

See Section 7.1 Supplemental Attachment for **ED30_5.1.4_Final_508.pdf**, which contains the table and text for this question

5.2.1 Level(s) of Reliability Testing Conducted

Accountable entity level (i.e., measure score) (e.g., signal-to-noise analysis)

5.2.2 Method(s) of Reliability Testing

A key metric for ED30 is the *inter-unit reliability* (IUR), which quantifies the proportion of total variation in a measure that is attributable to true differences between facilities, rather than to random variation. By definition, IUR ranges from 0 to 1, with higher values indicating that most of the observed variation in the quality measure reflects actual differences in facility performance—thereby implying higher precision in comparing facilities.

However, due to the ratio form of ED30, directly estimating the within-facility variance is not straightforward. We use a bootstrap-based approach to estimate this component of variability.

Let $T_1,\ldots,T_N$ represent the ED30 values for N facilities. For each facility i with n_i observations, we draw bootstrap samples *with replacement* from its patients (we found B=100 to be sufficient based on numerical experiments). For each sample, we compute the corresponding bootstrapped ED30s, denoted of $T^*_{i,1}$, … $T^*_{i,B.}$ We then compute the sample variance of these bootstrapped ED30s for each facility, denoted S_i^{*2}.

An estimate of the within-facility variance of ED30, namely, $\sigma_{t,w}^2$, is given by the bootstrap variance:

$$S_{t,w}^2 = \Sigma^N_{i=1}[(n_i-1)\, S_i^{*2}] / \Sigma^N_{i=1}(n_i-1).$$

Calling on formulas from the one-way analysis of variance, an estimate of the overall variance of T_i is

$$S_t^2 = \Sigma^N_{i=1}[n_i (T_i - \check{T})^2]/ [n'(N-1)],$$

where

$$\check{T} = Sn_i T_{i/} Sn_i$$

is the weighted mean of the observed ED30 and

$$n' = (Sn_i - Sn_i^2/Sn_i)/(N-1)$$

is approximately the average facility size (number of observations per facility). Note that S_t^2 is the total variation of ED30 and is an estimate of $\sigma_b^2 + \sigma_{t,w}^2$, where σ_b^2 is the between-facility variance, the true signal reflecting the differences across facilities. Thus, the estimated IUR, which is defined by

$$IUR = \sigma_b^2/(\sigma_b^2 + \sigma_{t,w}^2),$$

can be estimated with $(S_t^2 - S_{t,w}^2)/S_t^2$.

Note: ED30 calculations were restricted to facilities with at least 11 index discharges to ensure stable estimates and comply with restrictions on reporting of potentially identifiable patient information related to small cell size.

5.2.3 Reliability Testing Results

The IUR for ED30 in 2023 is 0.557, which means that over half of the variation can be attributed to between-facility variation.

5.2.3a Attach Additional Reliability Testing Results

ED30_Table-2a_Table-2b_IUR-info_Final_508.pdf

5.2.4 Interpretation of Reliability Results

The value of IUR indicates a moderate degree of reliability. When stratified by facility size, we find that, as expected, larger facilities have greater IUR.

See Pages 2-5 of **ED30_Table 2a_Table 2b_IUR info_Final_508.pdf** attached to 5.2.3a for more information about ED30 IUR.

Table 2a. Accountable Entity Level Reliability Testing Results by Denominator, Target Population Size

See 5.2.3a for **ED30_Table 2a_Table 2b_IUR info_Final_508.pdf** attachment, which contains the table and text for this question

Table 2b. Accountable Entity Level Reliability Testing Results by Reliability Score

See 5.2.3a for **ED30_Table 2a_Table 2b_IUR info_Final_508.pdf** attachment, which contains the table and text for this question

5.3.1 Level(s) of Validity Testing Conducted

Accountable entity level (i.e., measure score) (e.g., criterion validity)

5.3.2 Type of Accountable Entity Level Validity Testing Conducted

Empirical validity testing at the accountable entity-level (e.g., criterion validity, construct validity, known groups analysis)

5.3.3 Method(s) of Validity Testing

To validate ED30, we first stratified facilities into the ‘better than/as expected’ ‘and ‘worse than expected’ categories of the ED30 ratio. Next, we calculated mean performance scores for several quality measures: Standardized Mortality Ratio (SMR), Standardized Transfusion Ratio (STrR), Standardized Fistula Rate (SFR), Percentage of Prevalent Patients Waitlisted (PPPW), Standardized Readmission Ratio (SRR), and Standardized Emergency Department Visit Ratio (SEDR). We then compared mean performance scores across the combined strata of ‘better than/as expected’ and ‘worse than expected’ performance categories for ED30.

We expect better mean performance on the above quality measures for facilities classified as ‘better than/as expected’ for ED30 compared to facilities classified as ‘worse than expected.’ Compared to facilities that perform ‘worse than expected’, facilities that perform ‘better than/as expected’ on ED30 are likely to have more successful care coordination and other processes of care in place that may help patients avoid an ED visit in the vulnerable period following a recent

discharge:

- SMR: We expect to observe a lower mean standardized mortality ratio for facilities in the 'better than/as expected' category for ED30 compared to facilities classified as 'worse than expected.' Facilities with a higher rate of ED utilization after hospitalization may not have care processes in place to support these transitions in care.
- STrR: We expect to observe a lower mean standardized transfusion event ratio for facilities in the 'better than/as expected' category for ED30 compared to facilities classified as 'worse than expected.' Facilities that have a low STrR likely have processes of care in place to support robust anemia management and care transitions for patients recently discharged, compared to facilities with a higher STrR.
- PPPW: We expect to observe a higher mean standardized percentage of prevalent patients on the waitlist for facilities in the 'better than/as expected' category for ED30 compared to facilities classified as 'worse than expected.' Facilities that have a higher standardized percentage of patients on the transplant waitlist suggest they may have more robust processes to coordinate care outside of the dialysis facility with other providers and the transplant center, compared to facilities with lower percentages. This includes the facility taking steps to ensure patients maintain sufficient health status in order to be placed on the waitlist. Therefore, facilities that have higher standardized waitlist percentages are likely deploying effective care coordination and care transition processes that are expected to also reduce the likelihood that patients recently discharged will experience an acute event resulting in an ED visit.
- SEDR: We expect to observe a lower mean standardized emergency department visit ratio for facilities classified as 'better than/as expected' for ED30 compared to facilities classified as 'worse than expected' since both measures are a reflection of outpatient ED use. However, the measures represent two different aspects of dialysis patients' emergency department use that assess complementary elements of facility care. A low SEDR, corresponding to low overall emergency department encounter rates, indicates that the facility has processes (e.g. patient/staff education, assistance with primary care, frequent evaluation of target weight) in place to avoid the need for unscheduled acute care. A low ED30 indicates that a facility is successful in managing the transition of care (e.g. medication reconciliation, evaluation of target weight, assistance with follow up appointments) that occurs after a hospital discharge.

5.3.4 Validity Testing Results

See 5.3.4a for **ED30_5.3.4_Final_508.pdf,** which contains the table and text for this question

5.3.4a Attach Additional Validity Testing Results

ED30_5.3.4_Final_508.pdf

5.3.5 Interpretation of Validity Results

On average the standardized mortality ratio was 4% higher than the national average for facilities that were 'worse than expected,' and 1% lower from the national average (SMR = 0.99) for facilities that were 'better than/as expected' for ED30.

On average the standardized transfusion event ratio was 1% higher than the national average for facilities classified as 'worse than expected' while the 'better than/as expected' classification group of facilities were 5% lower than the national average. This suggests that facilities which have lower numbers of transfusion events likely have better processes of care in place to support robust anemia management and other care processes to support patients after they are discharged, thus reducing patient utilization of the ED post-discharge.

The mean facility standardized percentage of patients waitlisted (PPPW) in facilities classified as 'better than/as expected' was 16.00% compared to 13.67% in facilities classified as 'worse than expected,' suggesting that facilities that have higher rates of patients on the transplant waitlist may have more robust processes to coordinate care outside of the dialysis facility with other providers. These facilities are likely deploying more effective care coordination and other care processes that may reduce the likelihood of patients utilizing the ED for many acute care needs.

The SEDR ratio on average for facilities classified as 'better than/as expected' for ED30 was close to the national average (0.99), while facilities classified as 'worse than expected' had an SEDR ratio 38% higher than the national average. These results reinforce that both ED30 and SEDR assess complementary elements of care that are likely reflected by internal processes that support greater access to care and other clinical triaging of patients that may be experiencing onset of an acute event, which may help reduce patient utilization of the ED post-discharge for preventable acute care needs.

Taken together these results provide validation support for ED30. Performance on key quality measures that were expected to be related to ED use post-discharge was also related to facility flagging in the respective 'better than/as expected' or 'worse than expected' categories.

5.4.1 Methods Used to Address Risk Factors

Statistical risk adjustment model with risk factors

5.4.2 Conceptual Model Rationale

See 5.4.2a for **ED30_Conceptual Model_5.4.2_Final_508.pdf**, which includes both the conceptual model as well as the conceptual model rationale (which contains a table)

5.4.2a Attach Conceptual Model

ED30_Conceptual-Model_5.4.2_Final_508.pdf

5.4.3 Variable Distribution Across Measured Entities

See 5.4.3a for **ED30_5.4.3_Final_508.pdf**, which contains the table and text for this question

5.4.3a Attach Descriptive Statistics for Risk/Case-mix Variables

ED30_5.4.3_Final_508.pdf

5.4.4 Risk/Case-Mix Adjustment Modeling and/or Stratification Results

See 5.4.4a for **ED30_5.4.4_Final_508.pdf**, which contains the table and text for this question

5.4.4a Attach Risk/Case-mix Adjustment Modeling and/or Stratification Specifications

ED30_5.4.4_Final_508.pdf

5.4.5 Calibration and Discrimination

The model's ability to distinguish between patients who will and will not have an ED visit within 4-30 days of discharge was measured using the Area Under the Receiver Operating Characteristic (AUC) curve. The predicted AUC value is 0.661, which indicates the model has fair discriminatory power. This means the model is effective at differentiating between patients with higher and lower risk of an ED visit. Specifically, if a patient who was admitted to the ED after an inpatient discharge and a patient who was not are randomly selected, the model will correctly identify which patient was admitted 66.1% of the time.

Please see 5.4.5a for calibration and discrimination testing results found in **ED30_5.4.5a_Final_508.pdf**

5.4.5a Attach Calibration and Discrimination Testing Results

ED30_5.4.5a_Final_508.pdf

5.4.6 Interpretation of Risk/Case-mix Factor Findings

See Section 7.1 Supplemental Attachment for **ED30_5.4.6_Final_508.pdf**, which contains the text and table for this question

5.4.7 Final Approach to Address Risk Factors

Statistical risk adjustment model with risk factors

6.1.1 Current Status

In use

6.1.2 Current or Planned Use(s)

Public Reporting

6.1.3 Program Details

Name of the program and sponsor
Dialysis Facility Care Compare, Centers for Medicare and Medicaid Services
URL of the program
https://www.medicare.gov/care-compare
Purpose of the program

Dialysis Facility Care Compare helps patients find detailed information about Medicare-certified dialysis facilities. They can compare the services and the quality of care that facilities provide.

Geographic area and percentage of accountable entities and patients included

United States. All Medicare-certified dialysis facilities who are eligible for the measure and have at least 11 index discharges are included in the measure calculation for the program. For the October 2024 Dialysis Facility Compare refresh, ED30 results were reported for 420,627 index discharges in 7,245 facilities.

Applicable level of analysis and care setting

Facility level, Dialysis Facilities

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Name of the program and sponsor
Dialysis Facility Reports, Centers for Medicare and Medicaid Services
URL of the program
https://data.cms.gov/quality-of-care/medicare-dialysis-facilities
Purpose of the program

The Dialysis Facility Reports (DFRs) are provided as a resource for characterizing selected aspects of clinical experience at this facility relative to other caregivers in this state, End Stage Renal Disease (ESRD) Network, and across the United States. Since these data could be useful in quality improvement and assurance activities, each state's surveying agency may utilize the DFRs as a resource during their survey and certification process. Measures included in the DFRs are updated annually and available to dialysis facilities to review and submit comments prior to their release to State Survey Agencies and Regional Offices in September of each year.

Geographic area and percentage of accountable entities and patients included

United States. All Medicare-certified dialysis facilities who are eligible for the measure and have at least 11 index discharges are included in the measure calculation for the program. For the FY 2025 Dialysis Facility Reports, ED30 results were reported for 189,806 index discharges in 6,016 facilities.

Applicable level of analysis and care setting

Facility level, Dialysis Facilities

6.1.4 Attributes for Accountability Use

This measure is best suited for an accountability program that focuses on End Stage Renal Disease (ESRD) patients. Specifically, ESRD patients with Medicare coverage (either traditional Medicare or a Medicare Advantage Plan) would be the target population. Programs that focus on the dialysis facility as the accountable entity are ideal, as opposed to programs that focus on the Nephrologist or provider. As such, this is an outpatient measure with limited adjustments for social risk factors. However, additional adjustments could be made at the program level based on the needs or design of the program.

6.2.1 Actions of Measured Entities to Improve Performance

As described in the logic model there are multiple resources facilities have available which can help them prevent avoidable ED events. These include:

- Reconcile medications after hospitalization to avoid medication errors and ensure that any changes in medications at hospital discharge have occurred.
- Assessment of current dialysis prescription, in particular target weight and any changes in target weight that occurred after index admission.
- Assist with post-hospitalization follow up with either primary care providers or specialists.
- Tracking patients who do not achieve target weight for improved fluid management by offering additional or prolonged dialysis treatments
- Identification of patients with missed/shortened treatments and counseling or removal of barriers (e.g. assistance with transportation) to improve adherence to dialysis prescription
- Establish relationships with outpatient vascular access centers so that efficient management of vascular access problems (e.g. access thrombosis or malfunction) can be achieved without reliance on the Emergency Department
- Regular review and training refresher for infection control
- Educate patients about when to receive care in the ED vs. dialysis clinic or primary care and who to contact if questions or concerns arise between treatments

6.2.2 Feedback on Measure Performance

For DFCC, feedback can be provided any time through contacting the dialysisdata.org helpdesk. Preview periods allow for specific times for facilities to review and comment on measure calculations and provide an opportunity to request a list of patients included in the measure calculation.

Comments received during DFCC preview periods tend to be technical in nature, asking for clarification on how the SEDR is calculated for particular facilities, including questions about patient assignment and application of risk adjustment criteria.

6.2.3 Consideration of Measure Feedback

The revisions made to the measure specifications during this maintenance review were not directly in response to specific feedback received during public reporting (which, as described above, was more general in nature).

Based on enrollment information from the Medicare Enrollment Database (EDB), the percentage of ESRD dialysis beneficiaries enrolled in Medicare Advantage (MA) has steadily increased over time. From 12% in 2010, the proportion rose to 22% by 2020. Prior to 2020, there was an annual increase of approximately 1%. However, since 2021, the annual increase has been more than 5%.

The growth in ESRD beneficiaries joining MA plans carries significant implications for the metrics used to assess dialysis facility performance. Contrary to the data from Fee-For-Service (FFS) Medicare beneficiaries, MA outpatient encounters and administrative records had not been readily available for the purposes of analyzing facility quality, except for internal CMS use in risk adjustment and performance assessment.

6.2.4 Progress on Improvement

See Section 7.1 Supplemental Attachment for **ED30_6.2.4_Final_508.pdf**, which contains the text and table for this question

6.2.5 Unexpected Findings

None

7.1 Supplemental Attachment

ED30_7.1-Supplemental-Attachment.zip

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The measure developer is different from the measure steward

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