CBE ID

1463

Title

Standardized Hospitalization Ratio for Dialysis Facilities (SHR)

Project

Advanced Illness and Post-Acute Care

Endorsement Status

Endorsed

Is Under Review

No

Next Maintenance Cycle

Fall 2030

Previous Endorsement Cycle

Fall 2025

Initial Endorsement

Tue, 08/16/2011 - 20:41

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 hospitalization ratio is the ratio of the number of hospital admissions that occur for Medicare ESRD dialysis patients (both Fee For Service and Medicare Advantage) treated at a particular facility to the number of hospitalizations that would be expected given the characteristics of the dialysis facility's patients and the national norm for dialysis facilities. This measure is calculated as a ratio but can also be expressed as a rate.

1.6a Material Specification Change(s)

No

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

Hospitalizations are an important indicator of patient morbidity and quality of life. On average, patients with chronic kidney failure (end stage renal disease) who are on dialysis are admitted to the hospital nearly 1.5 times a year [1] and spend an average of 9.4 days in the hospital per year [2]. Hospitalizations account for approximately 35% percent of total Medicare expenditures for ESRD patients [1]. Studies have shown that improved health care delivery and care coordination may help reduce unplanned acute care including hospitalizations [1-2].

Hospitalization rates vary across dialysis facilities even after adjustment for patient characteristics, suggesting that hospitalizations might be influenced by dialysis facility practices. An adjusted facility-level standardized hospitalization ratio, accounting for differences in patients' characteristics, plays an important role in identifying potential problems and helps facilities provide cost-effective quality health care to help limit escalating medical costs.

References

[1] United States Renal Data System. 2024 *USRDS Annual Data Report: Epidemiology of kidney disease in the United States.* National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2024.

[2] United States Renal Data System. 2020 *USRDS Annual Data Report: Epidemiology of kidney disease in the United States.* National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2020.

1.13 Data Dictionary

Attached

1.13a Attach Data Dictionary

SHR_DataDictionary_Final_Oct-2025.xlsx

1.14 Numerator

The number of inpatient hospital admissions during the reporting period among eligible patients at the facility during the reporting period.

1.14a Numerator Details

The numerator is calculated using Medicare FFS and Medicare Advantage claims data. An inpatient hospitalization is observed by identification of a claim for an inpatient hospitalization; the patient is identified and attributed to a dialysis facility following rules discussed below in the denominator details. The numerator is the count of all such hospitalizations over the reporting period.

1.15 Denominator

The number of hospital admissions that would be expected among eligible patients at the facility during the reporting period, given the patient mix at the facility.

1.15a Denominator Details

Assignment of Patients to Facilities

The ESRD Quality Reporting System (EQRS), including CMS Medical Evidence Form (Form CMS-2728) and Death Notification Form (Form CMS-2746) is the primary basis for placing patients at dialysis facilities. Outpatient dialysis claims are used as an additional source when needed. We create a complete history of the status, location, and dialysis treatment modality of an ESRD patient from the date of the first ESRD service until the patient dies or the data collection cutoff date is reached. A new record is created each time a patient changes facilities or dialysis treatment modality; therefore, each record represents a time period associated with a specific modality and dialysis facility. Information regarding first ESRD service date, death and transplant is obtained from additional sources including the CMS Enrollment Database (EDB), transplant data from the Organ Procurement and Transplant Network (OPTN), and the Social Security Death Master File.

We detail patient inclusion criteria, facility assignment and how to count days at risk, all of which are required for the risk adjustment model. As patients can receive dialysis treatment at more than one facility in a given year, we assign each patient day to a facility (or no facility, in some cases) based on a set of conventions below.

General Inclusion Criteria for Dialysis Patients

Patients are included in the measure only after they have had ESRD for greater than 90 days. 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 hospitalizations during the first 90 days of ESRD as well as patients who die or recover kidney function during that time period.

In order to exclude patients who only received temporary dialysis therapy, we assign patients to a particular facility only after they have been on chronic dialysis there for the past 60 days. This 60-day period is used both for patients who started ESRD for the first time and for those who returned to dialysis after a transplant. That is, hospitalizations during the first 60 days of dialysis at a facility do not affect the SHR of that facility.

In order to assure completeness of information on hospitalizations 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. Specifically, months within a given dialysis patient-period are used for SHR 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-paid dialysis claims OR (b) at least one Medicare inpatient claim.

Identifying Facility Treatment Histories for Each Patient

For each patient, we identify the dialysis provider at each point in time. Starting with day 91 after onset of ESRD, we attribute patients to facilities according to the following rules. A patient is attributed to a facility once the patient has been treated there for the past 60 days. When a patient transfers from one facility to another, the patient continues to be attributed to the original facility for 60 days and then is attributed to the destination facility. In particular, a patient is attributed to his or her current facility on day 91 of ESRD if that facility had treated him or her for the past 60 days. If on day 91, the facility had not treated a patient for the past 60 days, we wait until the patient reaches day 60 of continuous treatment at that facility before attributing the patient to that facility. When a patient is not treated in a single facility for a span of 60 days (for instance, if there were two switches within 60 days of each other), we do not attribute that patient to any facility. Patients are removed from facilities three days prior to transplant in order to exclude the transplant hospitalization. Patients who withdrew from dialysis or recovered renal function remain assigned to their treatment facility for 60 days after withdrawal or recovery.

If a period of one year passes with neither paid dialysis claims nor EQRS information to indicate

that a patient was receiving dialysis treatment, we consider the patient lost to follow-up and do not include that patient in the analysis. If dialysis claims or other evidence of dialysis reappears, the patient is entered into analysis after 60 days of continuous therapy at a single facility.

Days at Risk for Medicare Dialysis Patients

After patient treatment histories are defined as described above, periods of follow-up time since ESRD onset are created for each patient. To adjust for duration of ESRD appropriately, we define six time intervals with cut points at 3-6 months, 6-12 months, 1-2 years, 2-3 years, 3-5 years, and 5+ years. A new time period begins each time the patient is determined to be at a different facility, or at the start of each calendar year or when crossing any of the above cut points.

The number of days at risk in each of these six intervals listed above is used to calculate the expected number of hospital admissions for the patient during that period. The SHR for a facility is the ratio of the total number of observed hospitalizations to the total number of expected hospitalizations during all time periods at the facility. Based on a risk adjustment model for the overall national hospitalization rates, we compute the expected number of hospitalizations that would occur for each month that each patient is attributed to a given facility. The sum of all such expectations for patients and months yields the overall number of hospital admissions that would be expected given the specific patient mix. This forms the denominator of the measure.

The denominator of the SHR is derived from a proportional rates model [3-5]. This is the recurrent event analog of the well-known proportional hazards or Cox model [2-3]. To accommodate large-scale data, we adopt a model with piecewise constant baseline rates [1] and the computational methodology [5].

References:

[1] Cook, R. and Lawless, J. The Statistical Analysis of Recurrent Events. New York: Springer. 2007.

[2] Cox, D.R. (1972) Regression Models and Life Tables (with Discussion). J. Royal statistical Society, Series B, 34, 187-220.

[3] Kalbfleisch, J.D. and Prentice, R. L. The Statistical Analysis of Failure Time Data. Wiley, New York, 2002.

[4] Lawless, J. F. and Nadeau, C. Some simple and robust methods for the analysis of recurrent events, Technometrics, 37 1995, 355-364.

[5] Lin, D.Y., Wei, L.J., Yang, I. and Ying, Z. Semi parametric regression for the mean and rate functions of recurrent events, Journal of the Royal Statistical Society Series B, 62, 2000, 771-730.

1.15b Denominator Exclusions

Exclusions that are implicit in the denominator definition include:

- Time at risk while a patient has had ESRD for 90 days or less
- <18 years old
- Non-Medicare primary insurance

1.15c Denominator Exclusions Details

See Denominator Details, 1.15a above

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 is the observed number of hospitalization events for a facility, and the denominator for the same facility is the expected number of hospitalization events adjusted for patient mix. The measure for a given facility is calculated by dividing the numerator by the denominator.

See flowchart for further detail: **SHR_Flow_Chart_Final_Oct 2025.pdf**, attached to 1.18a

1.18a Attach measure score calculation diagram

SHR_Flow_Chart_Final_Oct-2025.pdf

1.19 Measure Stratification Details

The measure is not stratified.

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 measure now incorporates Part C Medicare Advantage (MA) data for the MA enrollees. This 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 Dialysis Facility Care Compare (DFCC) would be restricted to facilities with at least five patient years at risk 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

SHR_Logic-Model_Final_Oct-2025_508.pdf

2.2 Evidence of Measure Importance

Hospitalizations continue to be an important indicator of patient morbidity and quality of life. On average, dialysis patients are admitted to the hospital nearly 1.5 times a year [1] and spend an average of 9.4 days in the hospital per year [2]. Hospitalizations account for approximately 35% percent of total Medicare expenditures for ESRD patients [1]. Studies have shown that improved health care delivery and care coordination may help reduce unplanned acute care including hospitalizations [3].

Studies have consistently highlighted opportunities to reduce unnecessary hospitalization in this population. Programs developed to improve intermediate outcomes can also result in reducing avoidable hospitalizations. For example, reduced catheter vascular access, small solute adequacy, anemia management, and fluid volume management to prevent cardiovascular complications in turn may reduce the risk of patients needing acute care. Infection prevention practices and dialysis organization culture [2-20] have also been shown to reduce the risk of unplanned hospitalization. For example, one study examined dialysis provider interventions targeting incident patients in order to improve outcomes for these patients that are at particularly high risk for poor outcomes that can lead to higher morbidity and mortality [2]. The results suggest improved clinical outcomes in terms of the percentage of incident patients having a preferred vascular access type which in turn has the potential to reduce hospitalization risk along with mortality. Other studies have reported an association between hospitalization and long-term catheter use [3].

More recent studies have provided further support for additional opportunities available to dialysis facilities to further reduce hospitalizations. Achieving adequate small solute clearance, as measured by Kt/V, continues to be a cornerstone of care with a favorable impact on the risk of hospitalization [24, 26]. More specifically, the components of the dialysis prescription such as the calcium and sodium concentrations [25] also impact overall hospitalization risk. Additionally, how staff at dialysis facilities manage a patient's potassium balance, whether through nutritional counseling or the dialysate potassium, can impact hospitalization rates particularly over the longest interdialytic interval [25]. ESA dosing levels as part of anemia management practices can put patients at increased risk of cardiovascular related hospitalizations and mortality with higher levels of ESA exceeding 8000 IU/week [30]. There is also an increase in hospitalizations related to psychiatric illness in both adults and children on dialysis (in-center and home dialysis) which has been found to put those patients are higher mortality risk [29]. Increased screening of dialysis patients, and inclusion of a mental health clinician as part of the patient's care team could help mitigate risk of psychiatric related hospitalizations.

One area that has received increased attention has been maintaining appropriate fluid balance as

it relates to hospitalizations for fluid overload. Studies have evaluated efforts to reduce missed treatments [21], achieve written target weight [23], and evaluation of the target weight after hospitalization [22] and all highlight the importance of volume management to reduce hospitalizations.

Finally, the CMS Centers for Medicare and Medicaid Innovation's Comprehensive End Stage Renal Disease Care model, and more recent ESRD Treatment Choices and Kidney Care Choices Models emphasize care coordination as a central feature of care delivery in order to reduce utilization and improve outcomes. This is evidenced by reported reductions in hospitalizations overall compared to the baseline year [27-28].

References

[1] United States Renal Data System. 2024 USRDS Annual Data Report: Epidemiology of kidney disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2024.

[2] Wilson SM, Robertson JA, Chen G, Goel P, Benner DA, Krishnan M, Mayne TJ, Nissenson AR. The IMPACT (Incident Management of Patients, Actions Centered on Treatment) Program: A Quality Improvement Approach for Caring for Patients Initiating Long-term Hemodialysis. Am J Kidney Dis 60(3): 435-443, 2012

[3] Vassalotti JA, Jennings WC, Beathard GA, Neumann M, Caponi S, Fox CH, Spergel LM and the Fistula First Breakthrough Initiative Community Education Committee. Fistula First Breakthrough Initiative: Targeting Catheter Last in Fistula First. Seminars Dialysis 25(3):303-310, 2012

[4] Ng LJ, Chen F, Pisoni RL, Krishnan M, Mapes D, Keen M, Bradbury BD. Hospitalization risks related to vascular access type among incident US hemodialysis patients. Nephrol Dial Transplant. 26(11):3659-66, 2011.

[5] Block GA, Kilpatrick RD, Lowe KA, Wang W, Danese MD. CKD-Mineral and Bone Disorder and Risk of Death and Cardiovascular Hospitalization in Patients on Hemodialysis. CJASN 8:2132-2140, 2013.

[6] Pun PH, Horton JR, Middleton JP. Dialysate calcium concentration and the risk of sudden cardiac arrest in hemodialysis patients. CJASN 8:797-803, 2013.

[7] Ishani A, Liu J, Wetmore JB, Lowe KA, Do T, Bradbury BD, Block GA, Collins AJ. Clinical outcomes after parathyroidectomy in a nationwide cohort of patients on hemodialysis. Clin J Am Soc Nephrol. 10(1):90-7, 2015.

[8] Tentori F, McCullough K, Kilpatrick RD, Bradbury BD, Robinson BM, Kerr PG, Pisoni RL. High rates of death and hospitalization follow bone fracture among hemodialysis patients. Kidney Int. 85(1):166-73, 2014.

[9] Weinhandl ED, Arneson TJ, St Peter WL. Clinical outcomes associated with receipt of integrated pharmacy services by hemodialysis patients: a quality improvement report. Am J Kidney Dis. Sep;62(3):557-67, 2013.

[10] Weinhandl ED, Gilbertson DT, Collins AJ. Mortality, Hospitalization, and Technique Failure in Daily Home Hemodialysis and Matched Peritoneal Dialysis Patients: A¬†Matched Cohort Study. Am J Kidney Dis. 67(1):98-110, 2016.

[11] Rosenblum A, Wang W, Ball LK, Latham C, Maddux FW, Lacson E. Hemodialysis catheter care strategies: A cluster-randomized quality improvement initiative. Am J Kidney Dis. 63(2):259-267, 2014.

[12] Patel PR, Kallen AJ. Bloodstream infection prevention in ESRD: Forging a pathway for success. Am J Kidney Dis. 63(2):180-182, 2014.

[13] Gilbertson DT, Guo H, Arneson TJ, Collins AJ. The association of pneumococcal vaccination with hospitalization and mortality in hemodialysis patients. Nephrol Dial Transplant. Sept;26(9):2934-9, 2011.

[14] Dalrymple LS, Mu Y, Nguyen DV, Romano PS, Chertow GM, Grimes B, Kaysen GA, Johansen KL. Risk Factors for Infection-Related Hospitalization in In-Center Hemodialysis. CJASN 10:2170-2180, 2015.

[15] Gilbertson DT, Wetmore JB. Infections Requiring Hospitalization in Patients on Hemodialysis CJASN 10:2101-2103, 2015.

[16] Arneson TJ, Liu J, Qiu Y, Gilbertson DT, Foley RN, Collins AJ. Hospital treatment for fluid overload in the Medicare hemodialysis population. Clin J Am Soc Nephrol.(6):1054-63, 2010.

[17] Erickson KF, Winkelmayer WC, Chertow GM, Bhattacharya J. Physician visits and 30-day hospital readmissions in patients receiving hemodialysis. J Am Soc Nephrol 25:2079-2087, 2014.

[18] Kliger AS. Maintaining safety in the dialysis facility. CJASN 10:688-695, 2015.

[19] Nissenson AR. Improving outcomes for ESRD patients: Shifting the quality paradigm. CJASN 9:430-434, 2014.

[20] Dasgupta I, Thomas GN, Clarke J, Sitch A, Martin J, Bieber B, Hecking M, Karaboyas A, Pisoni R, Port F, Robinson B, Rayner H. Associations between Hemodialysis Facility Practices to Manage Fluid Volume and Intradialytic Hypotension and Patient Outcomes. Clin J Am Soc Nephrol. 2019 Mar 7;14(3):385-393. doi: 10.2215/CJN.08240718. Epub 2019 Feb 5. PubMed PMID: 30723164; PubMed Central PMCID: PMC6419273.

[21] Al Salmi I, Larkina M, Wang M, Subramanian L, Morgenstern H, Jacobson SH, Hakim R, Tentori F, Saran R, Akiba T, Tomilina NA, Port FK, Robinson BM, Pisoni RL. Missed Hemodialysis Treatments: International Variation, Predictors, and Outcomes in the Dialysis Outcomes and Practice Patterns Study (DOPPS). Am J Kidney Dis. 2018 Nov;72(5):634-643. doi: 10.1053/j.ajkd.2018.04.019. Epub 2018 Aug 23. PubMed PMID: 30146421.

[22] Plantinga LC, Masud T, Lea JP, Burkart JM, O'Donnell CM, Jaar BG. Post-hospitalization dialysis facility processes of care and hospital readmissions among hemodialysis patients: a retrospective cohort study. BMC Nephrol. 2018 Jul 31;19(1):186. doi: 10.1186/s12882-018-0983-5. PubMed PMID: 30064380; PubMed Central PMCID: PMC6069998.

[23] Assimon MM, Wang L, Flythe JE. Failed Target Weight Achievement Associates with Short-

Term Hospital Encounters among Individuals Receiving Maintenance Hemodialysis. J Am Soc Nephrol. 2018 Aug;29(8):2178-2188. doi: 10.1681/ASN.2018010004. Epub 2018 May 23. PubMed PMID: 29793962; PubMed Central PMCID: PMC6065090.

[24] Rivara MB, Ravel V, Streja E, Obi Y, Soohoo M, Cheung AK, Himmelfarb J, Kalantar-Zadeh K, Mehrotra R. Weekly Standard Kt/V(urea) and Clinical Outcomes in Home and In-Center Hemodialysis. Clin J Am Soc Nephrol. 2018 Mar 7;13(3):445-455. doi: 10.2215/CJN.05680517. Epub 2018 Jan 11. PubMed PMID: 29326306; PubMed Central PMCID: PMC5967669.

[25] Brunelli SM, Du Mond C, Oestreicher N, Rakov V, Spiegel DM. Serum Potassium and Short-term Clinical Outcomes Among Hemodialysis Patients: Impact of the Long Interdialytic Interval. Am J Kidney Dis. 2017 Jul;70(1):21-29. doi: 10.1053/j.ajkd.2016.10.024. Epub 2017 Jan 19. PubMed PMID: 28111027.

[26] Maduell F, Ramos R, Varas J, Martin-Malo A, Molina M, Pérez-Garcia R, Marcelli D, Moreso F, Aljama P, Merello JI. Hemodialysis patients receiving a greater Kt dose than recommended have reduced mortality and hospitalization risk. Kidney Int. 2016 Dec;90(6):1332-1341. doi: 0.1016/j.kint.2016.08.022. Epub 2016 Oct 22. PubMed PMID: 27780586.

[27] KCC Model https://www.cms.gov/priorities/innovation/innovation-models/kidney-care...

[28] ETC Model https://www.cms.gov/priorities/innovation/innovation-models/esrd-treatm...

[29] Psychiatric Illness and Mortality in Hospitalized ESKD Dialysis Patients Kimmel PL, Fwu CW, Abbott KC, Moxey-Mims MM, Mendley S, Norton JM, Eggers PW. Clin J Am Soc Nephrol. 2019 Sep 6;14(9):1363-1371. doi: 10.2215/CJN.14191218. Epub 2019 Aug 22.

[30] Rafael Pérez-García, Javier Varas, Alejandro Cives, Alejandro Martín-Malo, Pedro Aljama, Rosa Ramos, Julio Pascual, Stefano Stuard, Bernard Canaud, José Ignacio Merello, the ORD group, Increased mortality in haemodialysis patients administered high doses of erythropoiesis-stimulating agents: a propensity score-matched analysis, *Nephrology Dialysis Transplantation*

2.4 Performance Gap

Data for Table 1 are from the data described in 1.25 for the year 2023. The total number of dialysis facilities included in the performance scores was 7,512. The total number of patients included in the performance score calculation was 569,900.

See **SHR_2.4 Table 1_Revised Nov 2025_508** PDF, attached to 2.4a, for Table 1 data and caption.

2.4a Attach Performance Gap Results

SHR_2.4-Table-1_Revised-Nov-2025_508.pdf

2.6 Meaningfulness to Target Population

There are several studies indicating that patients with kidney failure who require dialysis value an assessment of hospitalization rates at the dialysis facility level. In a study of 81 dialysis patients and 45 caregivers that assessed what outcomes were most important, respondents gave high priority to clinical outcomes such as infection that are associated with hospitalization [1]. In this study, outcomes such as hospitalization were given higher importance due to the disruption and inconvenience of daily living. Similarly, in a study of over 4,000 HD patients, reduction in hospital stays was among the highest priority outcomes when asked to rate the importance of 23 patient-relevant outcomes [2]. Finally, the ESRD Networks that are charged with helping dialysis facilities improve quality of care have reduction in hospitalizations as part of the statement of work. These Networks have Patient Advisory Committees that provide input and peer to peer communication to help reduce hospitalizations.

References

[1] Manera KE, Johnson DW, Craig JC, Shen JI, Ruiz L, Wang AY, Yip T, Fung SKS, Tong M, Lee A, Cho Y, Viecelli AK, Sautenet B, Teixeira-Pinto A, Brown EA, Brunier G, Dong J, Dunning T, Mehrotra R, Naicker S, Pecoits-Filho R, Perl J, Wilkie M, Tong A. Patient and Caregiver Priorities for Outcomes in Peritoneal Dialysis: Multinational Nominal Group Technique Study. Clin J Am Soc Nephrol. 2019 Jan 7;14(1):74-83. doi: 10.2215/CJN.05380518. Epub 2018 Dec 20. PMID: 30573659; PMCID: PMC6364541.

[2] Janssen IM, Scheibler F, Gerhardus A. Importance of hemodialysis-related outcomes: comparison of ratings by a self-help group, clinicians, and health technology assessment authors with those by a large reference group of patients. Patient Prefer Adherence. 2016 Dec 13;10:2491-2500. doi: 10.2147/PPA.S122319. PMID: 28008235; PMCID: PMC5171198.

3.1 Contributions Towards Closing Care Gaps

This field is optional for Fall 2025.

4.1a Data Structure and Availability

All the data incorporated into this measure 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).

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 Dialysis Facility Care Compare (DFCC) would be restricted to facilities with at least five patient-years at risk to comply with restrictions on reporting of potentially identifiable patient information related to small cell size.

4.3 Feasibility Informed Final Measure

No changes were made.

4.4 Proprietary Information

Not a proprietary measure and no proprietary components

5.1.1 Data Used for Testing

Data are derived from registry and claims data explained in more detail in question 1.25.

SHR is reported for one year on DFCC, and for four years on DFR. Here, we utilize four years of data for SHR when relevant, such as showing trends over time.

5.1.1a Dates of Testing Data

Calendar years 2020 - 2023

5.1.2 Differences in Data

None

5.1.3 Characteristics of Measured Entities

See **SHR_5.1.3_Final_Oct 2025_508** PDF, attached to Section 7.1 Supplemental Attachment

5.1.4 Characteristics of Units of the Eligible Population

See **SHR_5.1.4_Final_Oct 2025_508** PDF, attached to Section 7.1 Supplemental Attachment

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

We evaluated the reliability of the SHR using 2023 data from Medicare End-Stage Renal Disease (ESRD) dialysis patients. A key metric for this evaluation 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 SHR, 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 SHR values for N facilities. For each facility i with n_i subjects, we draw B 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 SHRs, denoted of $T^*_{i,1}$, … $T^*_{i,B}$. We then compute the sample variance of these bootstrapped SHRs for each facility, denoted S_i^{*2}.

An estimate of the within-facility variance of SHR, 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 $\check{T} = S\, n_i T_{i\,/} Sn_i$ is the weighted mean of the observed SHR and

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

is approximately the average facility size (number of patients per facility). Note that S_t^2 is the total variation of SHR 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: SHR calculations were restricted to facilities with at least five patient-years at risk 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 SHR in 2023 is 0.54, which means that over half of the variation in the one-year SHR can be attributed to the between-facility variation. The SHR measure IUR is similar to previous cycles, and has been endorsed and re-endorsed for the last several cycles. Please see the **SHR_5.2.3a Table 2_IUR Reliability_Revised Nov 2025_508** PDF attachment in Section 5.2.3a for additional information but to summarize:

- Dialysis facilities are extremely small compared to other health care entities (e.g. hospitals, nursing homes) such that risk adjusted measures do not have a large enough facility size to achieve an IUR of 0.6
- Determining if a facility is “worse than expected” uses statistical hypothesis testing to mitigate the risk of inappropriately flagging small facilities. Specifically, smaller facilities

need to have an SHR farther from the median to be flagged compared to larger facilities.
- Star Ratings for dialysis facilities combine information across multiple measures to reduce random noise so that even a measure with a low IUR can contribute to raising the overall reliability of the combined measure set.
- The Quality Incentive Program (QIP) uses a small-facility adjuster (generally applied to facilities with 25 or fewer eligible patients), which helps mitigate the low IURs that would otherwise contribute to payment reductions.
- The number of preventable events, even for facilities in the lower IUR decile groups, is generally >3, suggesting the potential for improvement at a given facility.

5.2.3a Attach Additional Reliability Testing Results

SHR_5.2.3a-Table-2_IUR-Reliability_Revised-Nov-2025_508.pdf

5.2.4 Interpretation of Reliability Results

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

Note that Table 2 data and caption are attached to 5.2.3a and called **SHR_5.2.3a Table 2_IUR Reliability_Revised Nov 2025_508**

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

We assessed the validity of the SHR by testing associations with other implemented quality measures using Spearman correlations and calendar year 2023 data. Our hypotheses of the resulting associations are as follows:

Negative Relationships

- Vascular Access: Standardized Fistula Rate (SFR) – We expect a negative association between SFR and SHR. Successfully creating an AVF is generally seen as representing a robust process to coordinate care outside of the dialysis facility, and potentially reduces the likelihood of adverse events, like infection that can increase the risk of patient hospitalization. Higher rates of the facility level SFR will be negatively associated with hospitalization as measured by SHR.
- Adult HD Kt/V ≥ 1.2: We expect a negative association between the percentage of adult

hemodialysis patients with Kt/V>= 1.2 and SHR. Facilities that have a high proportion of patients with adequate small solute clearance may also have processes of care in place that would likely avoid hospitalization. In addition, patients who are unable to achieve a Kt/V of 1.2 may be morbidly obese, use a catheter for vascular access, or be non-adherent to treatment recommendations such that they may be at higher risk for hospitalization. Higher rates of the facility level percentage of adult HD patients with adequate dialysis (facility percentage Kt/V≥ 1.2) will be negatively associated with SHR.

Positive Relationships

- Vascular Access: Long-term catheter rate (catheter in use >=3 continuous months): We expect a positive association between long-term catheter rate and SHR. Long-term catheters put patients at increased risk for infection and other complications. Additionally, a high long-term catheter rate also indicates a higher patient comorbidity burden at the facility level such that sicker patients who have a long-term catheter may also be more likely to be admitted to the hospital. Higher long-term catheter rates will be positively associated with SHR.
- Standardized Mortality Ratio (SMR): We expect a positive association with SHR. Patients who require acute inpatient medical care represent an at-risk population for mortality since they likely have greater acute medical needs or complications from chronic comorbid conditions that put them at higher risk for death. Higher SMR will be positively associated with SHR.
- Standardized Readmission Ratio (SRR): We expect a positive association with SHR. Both hospitalization and readmission are a reflection of hospital utilization and increased comorbidity burden. Additionally, readmission of patients after a recent discharge indicates they still require acute inpatient medical attention or experience other post-discharge complications. Higher SRR will be positively associated with SHR.
- Standardized Transfusion Ratio (STrR): We expect a positive association with SHR. Patients with severe anemia may require hospitalization and blood transfusion, placing them at risk for other adverse acute medical events. Additionally, most blood transfusions occur in the in-patient setting. Higher STrR will be positively associated with SHR.

5.3.4 Validity Testing Results

See **SHR_5.3.4_Final_Oct 2025_508** PDF, attached to 5.3.4a

5.3.4a Attach Additional Validity Testing Results

SHR_5.3.4_Final_Oct-2025_508.pdf

5.3.5 Interpretation of Validity Results

As hypothesized, higher SHR values were associated with higher facility mortality rates, higher transfusion events, higher readmission, and higher long-term catheter rates. Additionally, high SHR values were associated with lower AV Fistula rates and suboptimal dialysis adequacy. All results were statistically significant. These results align with expectations of outcomes related to quality of care for dialysis patients.

5.4.1 Methods Used to Address Risk Factors

Statistical risk adjustment model with risk factors

5.4.2 Conceptual Model Rationale

The risk adjustment is based on a Cox or relative risk model. The adjustment is made for the following variables:

- Patient age: Age (continuous); Age squared
- Sex
- Medicare Advantage coverage
- Diabetes as cause of ESRD
- Nursing home status in previous 365 days:
    - None (0 days) (reference)
    - Short term (0-89 days)
    - Long term (>=90 days)
- BMI at ESRD incidence
    - BMI < 18.5
    - 18.5 ≤ BMI < 24.9
    - 25≤ BMI < 29.9
    - BMI ≥ 30 (reference)
- Comorbidities at ESRD incidence
    - Atherosclerotic heart disease
    - Other cardiac disease
    - Diabetes that is not cause of ESRD (all types including diabetic retinopathy)
    - Congestive heart failure
    - Inability to ambulate
    - Chronic obstructive pulmonary disease
    - Inability to transfer
    - Malignant neoplasm, cancer
    - Peripheral vascular disease
    - Cerebrovascular disease, CVA, TIA
    - Tobacco use (current smoker)
    - Alcohol dependence
    - Drug dependence
    - No Medical Evidence (CMS-2728) Form
    - At least one of the comorbidities listed
- A set of prevalent comorbidities based on Medicare claims (individual comorbidities categorized into 91 groups – see below)
    - Includes an adjustment for less than 6 months of Medicare covered months in prior calendar year
- Beside main effects, two-way interaction terms between age, sex, and cause of ESRD are also included:
- Diabetes as cause of ESRD*Sex
- Diabetes as cause of ESRD*Age
- Age*Sex

In this model, covariates are taken to act multiplicatively on the admission rate and the adjustment model is fitted with facility defining strata so as to provide valid estimates even if the distribution of adjustment variables differs across facilities [1-4]. All analyses are done using SAS. In general, adjustment factors for the SHR were selected based on several considerations. As noted above, we began with a large set of patient characteristics, including demographics, comorbidities at ESRD incidence, a set of prevalent comorbidities, and other characteristics. Factors considered appropriate were then investigated with statistical models, including interactions between sets of adjusters, to determine if they were related to hospitalizations. Factors related to the SHR were also evaluated for face validity before being included. We also made refinements to the nursing home indicator, splitting it into two indicators representing long-term and short-term nursing home stays in the prior 365 days. This granularity better accounts for the sicker and higher risk population requiring longer term skilled nursing home care. Age is transformed into a quadratic functional form to better estimate the age specific effects on risk of hospital admission. We also include age as a linear variable.

In 2007, a Technical Expert Panel (TEP) was convened and provided advice on various aspects of the SHR, including adjustment factors. The 2007 Hospitalization TEP felt that facility characteristics are generally not appropriate for use as adjusters, but should be evaluated for their potential as proxies for patient characteristics. The TEP also recommended that facility market characteristics, such as local hospital utilization rates, should not be considered as risk adjusters.

In 2015, CMS contracted with UM-KECC to convene an additional TEP to consider the addition of prevalent comorbidities in the SHR risk adjustment models. This process resulted in the TEP recommending a list of 210 conditions for inclusion as risk adjustors. The TEP further recommended that: (1) comorbidities for inclusion as risk-adjusters in a particular year should be present in Medicare claims in the preceding calendar year; and (2) determination of a prevalent comorbidity required at least two outpatient claims or one inpatient claim. With the expansion of diagnostic codes that accompanied the transition from ICD-9 to ICD-10 in 2015, the original list of 210 comorbidities grew to over 1000 ICD-10 codes. The 210 individual ICD-9 codes were collapsed into 91 clinical groups using the AHRQ CCS categories as the framework for grouping the selected prevalent comorbidities. Using a crosswalk, the ICD-10 codes were then mapped to the 91 clinical comorbidity groups that are included in the SHR risk adjustment model. The decision to group the comorbidities was to achieve greater model parsimony.

Ascertainment of prevalent comorbidities is based on both outpatient (OP, SN, HH, HS, and PS claim types) and inpatient (IN claim types) Medicare claims, including those from Part C.

A patient is considered to have a particular prevalent comorbid condition if one of the ICD-10 codes for that condition (see Section 7.1 for list of codes) appears on a claim for the patient in the

prior year. If no such claim is found, the patient is considered to not have the condition. If a patient has less than 6 months of Medicare coverage in the prior year, we consider the prevalent comorbidity information to be missing. This requirement is intended to allow us to distinguish between a patient who does not have a particular comorbidity from one who does not have claims during enough of the year to determine whether the condition is present or not. An indicator is included in the model to identify these patients and all comorbid conditions are set to 'not present'.

Finally, SDS/SES factors were evaluated based on appropriateness (whether related to disparities in care), empirical association with the outcome, and as supported in published literature [5]. The relationship among patient level SDS, socioeconomic disadvantage and health care utilization such as hospitalization is well-established in the general population and continues to receive considerable attention over the past decade [6-10]. The likelihood of hospitalization has been related to socioeconomic disadvantage through differences in health status, insurance coverage, and access to quality primary care [11-12]. Further, individual and market or area-level measures of deprivation have been shown to contribute independently to preventable hospitalizations [13].

Within the dialysis population, area-level SES are associated with poor outcomes [14]; while patient level factors such as race are predictive of differences in certain clinical outcomes by race [15-16]. In a study of incident hemodialysis patients, patients of Hispanic ethnicity had lowest all-cause hospital length of stay compared to whites, while patients of black race had intermediate all-cause hospital admissions that was lower relative to whites but higher than Hispanic patient, with differences observed across certain age groups [15]. Moreover, the study authors found that infection-related hospitalizations were significantly higher for black and Hispanic patients compared to non-Hispanic whites. These associations could indicate certain facility level practices related to effective infection control and prevention may unevenly impact patients of black race and Hispanic ethnicity [15].

Insurance status is also related to health outcomes but this has not been studied extensively within the dialysis population as it relates to hospitalization, though the association has been documented in studies of the general dual Medicare and Medicaid population. Dual eligibles typically have greater comorbidity burden, face access to care barriers which in turn drive higher hospital utilization [17-19].

Maintaining employment is a challenge for dialysis patients which in turn can influence well-being and may have a proximal impact on outcomes such as hospitalization [20].

Given these observed linkages we tested these patient- and area-level SDS/SES variables based on

the conceptual relationships as described above and demonstrated in the literature [23], as well as the availability of data for the analyses, we tested the following variables:

Patient level:

- Sex
- Race
- Ethnicity
- Medicare dual eligible
- ZIP code level – Area Deprivation Index (ADI) from Census data (2009-2013). Based on patient zip-code. We use the publicly available Area Deprivation Index (ADI) originally developed by Singh and colleagues at the University of Wisconsin. We applied the updated ADI based on 2009-2013 census data [21-22]. The ADI reflects a full set of SES characteristics, including measures of income, education, and employment status, measured at the ZIP code level.

References:

[1] Cox DR: Regression models and life tables (with discussion). JRStat Soc [SerB]34: 187–220, 1972

[2] Kalbfleisch JD, Prentice RL: The statistical analysis of failure time data, Hoboken, New Jersey, John Wiley & Sons, Inc., 2002

[3] J. F. Lawless and C. Nadeau. Some Simple Robust Methods for the Analysis of Recurrent Events Technometrics. Vol. 37, No. 2 (May, 1995), pp. 158-168

[4] Liu, D., Schaubel, D.E. and Kalbfleisch, J.D. Computationally efficient marginal models for clustered recurrent event data, University of Michigan Department of Biostatistics Technical Reports, 2010.

[5] Agency for Healthcare Research and Quality, Rockville, MD. Internet Citation: Chapter 3: Creation of New Race-Ethnicity Codes and SES Indicators for Medicare Beneficiaries - Chapter 3. January 2008. Publication # 08-0029-EF.
http://archive.ahrq.gov/research/findings/final-reports/medicareindicat...

[6] Agency for Healthcare Research and Quality (AHRQ). 2011 National Health Care Disparities

Report. Washington, DC: AHRQ; 2012).

[7] Agency for Healthcare Research and Quality (AHRQ). 2012 National Health Care Disparities Report. Washington, DC: AHRQ; Reports: 2013).

[8] Agency for Healthcare Research and Quality (AHRQ). 2013 National Health Care Disparities Report. Washington, DC: AHRQ; Reports: 2014).

[9] Agency for Healthcare Research and Quality (AHRQ). 2014 National Health Care Disparities Report. Washington, DC: AHRQ; 2015).

[10] Agency for Healthcare Research and Quality (AHRQ). 2015 National Health Care Disparities Report. Washington, DC: AHRQ; 2016).

[11] Basu, J., Thumula, V., and Mobley, L.R. (2012, July-September). Changes In Preventable Hospitalization Patterns Among Adults. A Small Area Analysis Of U.S. States. Journal of Ambulatory Care Management 35(3), pp.3280-3290

[12] J Blustein, K Hanson and S Shea. Preventable Hospitalizations And Socioeconomic Status. Health Affairs 17, no.2 (1998):177-189).

[13] Moy E, Chang E, Barrett M. Potentially Preventable Hospitalizations — United States, 2001–2009. CDC Morbidity and Mortality Weekly Report (MMWR). Supplements November 22, 2013 / 62(03);139-143

[14] Almachraki F, Tuffli M, Lee P, Desmarais M, Shih HC, Nissenson A, and Krishnan M. Population Health Management. Volume 19, Number 1, 2016.

[15] Yan G, Norris K, Greene T, Yu A, Ma J, Yu W, and Cheung A. Race/Ethnicity, Age, and Risk of Hospital Admission and Length of Stay during the First Year of Maintenance Hemodialysis. Clin J Am Soc Nephrol 9: epub (June), 2014.

[16] Whittle JC, Whelton PK, Seidler AJ, Klag MJ. Does Racial Variation In Risk Factors Explain Black-White Differences In The Incidence Of Hypertensive End-Stage Renal Disease? Arch Intern Med. 1991 Jul;151(7):1359-64.

[17] Jiang H, Wier L, Potter DEB, Burgess J. AHRQ Statistical Brief #96 Potentially Preventable Hospitalizations among Medicare-Medicaid Dual Eligibles, September 2010.

[18] Moon S., Shin J. BMC Public Health. 2006 Apr 5;6:88. Health Care Utilization Among Medicare-Medicaid Dual Eligibles: A Count Data Analysis.

[19] Wright B, Potter A, and Trivedi A. Federally Qualified Health Center Use Among Dual Eligibles: Rates Of Hospitalizations And Emergency Department Visits Health Affairs, 34, no.7 (2015):1147-1155.

[20] Curtin R, Oberley E, Sacksteder P, and Friedman A. Differences Between Employed and Nonemployed Dialysis Patients. AJKD Vol 27:4. (April) 1996. 533-540.

[21] Singh, GK. Area Deprivation and Widening Inequalities In US Mortality, 1969–1998. Am J Public Health. 2003; 93(7):1137–1143.

[22] University of Wisconsin School of Medicine Public Health. 2015 Area Deprivation Index v2.0. Downloaded from https://www.neighborhoodatlas.medicine.wisc.edu10/31/2018.

[23] Rodriguez R, Sen S, Mehta K, Moody-Ayers S, Bacchetti P, and O'Hare A. Geography Matters: Relationships among Urban Residential Segregation, Dialysis Facilities, and Patient Outcomes. Ann Intern Med. 2007; 146:493-501.

5.4.2a Attach Conceptual Model

SHR-Conceptual-Model_Final_Oct-2025_508.pdf

5.4.3 Variable Distribution Across Measured Entities

See **SHR_5.4.3_Final_Oct 2025_508 PDF**, attached to 5.4.3a

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

SHR_5.4.3_Final_Oct-2025_508.pdf

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

See 5.4.4a for a PDF that combines the responses for 5.4.4 and 5.4.4a called **SHR_5.4.4 and 5.4.4a_Final_Oct 2025_508**

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

SHR_5.4.4-and-5.4.4a_Final_Oct-2025_508.pdf

5.4.5 Calibration and Discrimination

To assess model performance, we evaluated discrimination using the C-statistics. The C-statistics quantifies the model's ability to discriminate between outcomes based on the included risk factors. Specifically, the SHR model is a recurrent event model, for which the C-statistics measures the concordance between the observed rates of recurrent events and the model-based predicted rates.

The C-statistic for SHR is 0.61, which indicates moderate model discrimination, reflecting the model's ability to distinguish high-risk from low-risk subjects.

Note: this text is also uploaded as an attachment to 5.4.5a since that is a required field.

5.4.5a Attach Calibration and Discrimination Testing Results

SHR_5.4.5a_Final_Oct-2025_508.pdf

5.4.6 Interpretation of Risk/Case-mix Factor Findings

The final model includes the following risk factors:

- Patient age: Age (continuous); Age squared
- Sex
- Medicare Advantage coverage
- Diabetes as cause of ESRD
- Nursing home status in previous 365 days:
    - None (0 days) (reference)
    - Short term (0-89 days)
    - Long term >=90 days)
- BMI at ESRD incidence
    - BMI < 18.5

    - 18.5 ≤ BMI < 25
    - 25≤ BMI < 30
    - BMI ≥ 30 (reference)
- Comorbidities at ESRD incidence
    - Atherosclerotic heart disease
    - Other cardiac disease
    - Diabetes that is not cause of ESRD (all types including diabetic retinopathy)
    - Congestive heart failure
    - Inability to ambulate
    - Chronic obstructive pulmonary disease
    - Inability to transfer
    - Malignant neoplasm, cancer
    - Peripheral vascular disease
    - Cerebrovascular disease, CVA, TIA
    - Tobacco use (current smoker)
    - Alcohol dependence
    - Drug dependence
    - No Medical Evidence (CMS-2728) Form
    - At least one of the comorbidities listed
- A set of prevalent comorbidities based on Medicare claims (individual comorbidities categorized into 91 groups – see below)
    - Includes an adjustment for less than 6 months of Medicare covered months in prior calendar year
- Beside main effects, two-way interaction terms between age, sex, and cause of ESRD are also included:
- Diabetes as cause of ESRD*Sex
- Diabetes as cause of ESRD*Age
- Age*Sex

These patient level covariates were included in the model based on strength of association with the dependent variable (hospitalizations) suggesting strong predictors of hospitalization events. In addition, the variable definitions are objectively defined using data from national data sets managed by federal agencies and contributed to by all U.S. dialysis facilities and organizations (e.g. EQRS). In addition, prevalent comorbidity groups utilize Medicare claims and Medicare Advantage encounter data.

Risk Adjustment Factors Excluded from the Final Model

- Race
    - White
    - Black
    - Asian/PI
    - Native Amer
- Hispanic Ethnicity
- Medicare coverage (dual eligible)
- Area Deprivation Index

The sociodemographic variables tested demonstrated significant, albeit relatively small associations with the patient-level model outcomes. While race and Hispanic ethnicity were negatively associated with hospitalizations, there is concern whether these are meaningful biological constructs and whether there should be an expectation that race is an independent predictor of hospitalization. Finally, while the ADI was significant, the impact was very small and near the national norm of 1.00. In order to present the most parsimonious, accurate and implementable model, we elected to exclude these covariates with very little effect on facility-level flagging.

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, Payment Program

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 5 patient-years at risk are included in the measure calculation for the program. Five patient-years at risk means that the total time at risk in the measure denominator for the reporting period of calendar year 2023 must meet or exceed 5 patient-years exposure. For the October 2024 Dialysis Facility Compare refresh, 7,477 U.S. dialysis facilities serving 516,700 patients had SHR results reported.

Applicable level of analysis and care setting

Facility level, Dialysis Facilities

,
Name of the program and sponsor
ESRD QIP, Centers for Medicare and Medicaid Services
URL of the program
https://www.cms.gov/medicare/quality/end-stage-renal-disease-esrd-quality-incen...
Purpose of the program

The Centers for Medicare & Medicaid Services (CMS) administers the End-Stage Renal Disease Quality Incentive Program (ESRD QIP) to promote high-quality services in renal dialysis facilities. The first of its kind in Medicare, this program changes the way CMS pays for the treatment of patients who receive dialysis by linking a portion of payment directly to facilities' performance on quality of care measures. These types of programs are known as "pay-for-performance" or "value-based purchasing" (VBP) programs.

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 5 patient-years at risk are included in the measure calculation for the program. Five patient-years at risk means that the total time at risk in the measure denominator for the reporting period of calendar year 2023 must meet or exceed 5 patient-years exposure.

For the latest QIP update, 7,591 U.S. dialysis facilities had SHR results reported. Patient counts could not be included here as they were not available in this program's public use files.

Applicable level of analysis and care setting

Facility level, Dialysis Facilities

,
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 dialysis facilities at the state, network, and national level, respectively. 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 5 patient-years at risk are included in the measure calculation for the program. Five patient-years at risk means that the total time at risk in the measure denominator for the reporting period of calendar year 2023 must meet or exceed 5 patient-years exposure.

For the FY 2025 Dialysis Facility Reports, 7,706 U.S. dialysis facilities serving 523,011 patients had SHR results reported.

Applicable level of analysis and care setting

Facility level, Dialysis Facilities

6.2.1 Actions of Measured Entities to Improve Performance

There are a number of actions that dialysis facility providers can take to help manage high risk patients and avoid preventable hospitalizations. Examples include:

- Optimize fluid management: Encouraging patients to complete the full duration of their treatments along with not missing treatments (or rescheduling missed treatments) is important to avoid hospitalizations for fluid overload.
- Infection prevention: Monitoring and reducing blood-stream infections, particularly those that are dialysis catheter related is a cornerstone for reducing hospitalization. In addition, promoting and administering vaccinations with influenza, pneumococcal, and hepatitis B.
- Medication reconciliation: this is especially important after hospitalization to prevent readmission.
- Nutrition and Metabolic support: nutrition counseling to avoid hyperkalemia.
- Anemia Management: appropriate use of erythrocyte stimulating agents can avoid the need for hospitalization for red blood cell transfusion.

These processes are directly tied to the required credentials and training facilities must have per the Conditions for Coverage and to be certified and in good standing with Medicare. Facilities can take further action to provide effective vascular access education encouraging patients to consider a permanent access; dietary management by a renal dietician; reviewing and modifying dialysis prescription and fluid removal; following up with patients that miss a dialysis treatment and offering an additional treatment if needed, and regular review and training refreshers for infection control.

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.

For the ESRD QIP, feedback can be provided any time through contacting the QIP helpdesk. Preview periods allow for specific times for facilities to review and comment on measure calculations. Comments can also be submitted in response to the Notice of Proposed Rulemaking for each QIP payment year.

Comments received during DFCC preview periods tend to be technical in nature, asking for clarification on how the SHR is calculated for particular facilities, including questions about

patient assignment and application of risk adjustment criteria, and counting of readmissions in both the SHR and SRR resulting in potentially penalizing facilities in both measures.

QIP: Note that since UM-KECC is not the contractor responsible for the ESRD Quality Incentive Program, we do not have access to the detailed comments/requests that are submitted during the annual preview period for that program.

6.2.3 Consideration of Measure Feedback

Below we have explained our response to the common questions we noted above.

Several comments questioned the use of both SHR and Standardized Readmission Ratio (SRR) which could doubly penalize facilities since a readmission would count in both the SHR and SRR measures. While the SHR and SRR may both count the same hospitalization event, we believe this is appropriate because it places additional emphasis on the importance of avoiding hospitalizations and, separately, re-hospitalization for dialysis patients. Doing so can help reduce this major cost driver as well as promote better patient health-related quality of life. In addition, while the SRR and SHR are moderately correlated with one another, it is possible for a facility to score relatively well on one measure, and relatively poorly on the other. We also believe that the measures capture distinct aspects of the quality of care provided by a dialysis facility. The SRR assesses the coordination of care during transitions as dialysis patients are discharged from an acute care hospital into the care of a dialysis facility, and the SHR evaluates the facility's overall performance in reducing hospitalizations.

Several comments were suggestions for more expansive risk adjustment, facility attribution, and a cause-specific SHR. The SHR under maintenance has, and continues to, include risk adjustment for a set of prevalent comorbidities that were determined likely not to be the result of facility care (as determined by a 2015 Technical Expert Panel). The SHR also excludes patients from a facility if they have not had ESRD for more than 90 days, or if they have not been receiving treatment at the facility for more than 60 days, which precludes the risk of patients being included in a facility's SHR prior to treatment. The 2007 SHR TEP was not able to achieve consensus on a cause-specific SHR and therefore recommended the all-cause measure. The SHR measure continues to be an all-cause hospitalization measure, reflecting hospital admissions regardless of cause.

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 have 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 **SHR_6.2.4_Final_Oct 2025_508** PDF, attached to Section 7.1 Supplemental Attachment, for a full response to this question

6.2.5 Unexpected Findings

None

7.1 Supplemental Attachment

SHR_Section-7.1-Supplemental-Attachment_Revised-Nov-2025.zip

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Measure Developer POC

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The measure developer is different from the measure steward

Yes

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