

## Measure Information Form

***Project Title:***

End-Stage Renal Disease Access to Kidney Transplantation Measure Development

***Project Overview:***

The Centers for Medicare & Medicaid Services (CMS) has contracted with the University of Michigan's Kidney Epidemiology and Cost Center (UM-KECC) to develop access to kidney transplantation measures for ESRD patients. The contract name is the ESRD Quality Measure Development, Maintenance, and Support contract. The contract number is HHSM-500-2013-13017I.

***Date:***

Information included is current on December 21, 2015.

## **Measure Name**

Standardized First Kidney Transplant Waitlist Ratio for Incident Dialysis Patients (SWR)

## **Descriptive Information**

### **Measure Name (Measure Title De.2.)**

Standardized First Kidney Transplant Waitlist Ratio for Incident Dialysis Patients (SWR)

### **Measure Type De.1.**

Process

### **Brief Description of Measure De.3.**

This measure tracks the number of incident patients at the dialysis facility under the age of 75 listed on the kidney or kidney-pancreas transplant waitlist or who received living donor transplants within the first year of initiating dialysis.

### **If Paired or Grouped De.4.**

N/A

### **Subject/Topic Areas De.5.**

Renal: End Stage Renal Disease (ESRD)

Renal: Renal

### **Crosscutting Areas De 6.**

Care Coordination: Care Coordination

Disparities

Access

## **Measure Specifications**

### **Measure-specific Web Page S.1.**

TBD

### **If This Is an eMeasure S.2a.**

N/A

### **Data Dictionary, Code Table, or Value Sets S.2b.**

See Appendix A

### **For Endorsement Maintenance S.3.**

N/A

#### **Numerator Statement S.4.**

Number of patients at the dialysis facility listed on the kidney or kidney-pancreas transplant waitlist or who received living donor transplants within the first year following initiation of dialysis.

#### **Time Period for Data S.5.**

Data are currently aggregated across 3 years due to the low number of event rates.

#### **Numerator Details S.6.**

The numerator for the SWR is the observed number of events (i.e., waitlisting or receipt of a living-donor transplant). To be included in the numerator for a particular facility, the patient must meet one of the two criteria:

- The patient is on the kidney or kidney-pancreas transplant waitlist or
- The patient has received a living donor transplant

#### **Denominator Statement S.7.**

The denominator for the SWR is the expected number of waitlisting or living donor transplant events at the facility according to each patient's treatment history for patients within the first year following initiation of dialysis, adjusted for age, among patients under 75 years of age who were not already waitlisted prior to dialysis.

#### **Target Population Category S.8.**

Populations at risk: Populations at risk

#### **Denominator Details S.9.**

A treatment history file is the data source for the denominator calculation used for the analyses supporting this submission. This file provides 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. For each patient, a new record is created each time he/she changes facility or treatment modality. Each record represents a time period associated with a specific modality and dialysis facility.

CROWNWeb is the primary basis for placing patients at dialysis facilities and dialysis claims are used as an additional source. Information regarding first ESRD service date, death, and transplant is obtained from CROWNWeb (including the CMS Medical Evidence Form (Form CMS-2728) and the Death Notification Form (Form CMS-2746)) and Medicare claims, as well as the Organ Procurement and Transplant Network (OPTN) and the Social Security Death Master File.

The denominator of the SWR for a given facility represents the number of expected events (waitlistings or living-donor transplants) at the facility. The estimation of this expected number accounts for the follow-up time and risk profile of each patient. The risk profile is quantified through covariate effects estimated through Cox regression (Cox, 1972; SAS Institute Inc., 2004; Kalbfleisch and Prentice, 2002; Collett, 1994).

The model is currently age adjusted.

#### **Denominator Exclusions (NQF Includes “Exceptions” in the “Exclusion” Field) S.10.**

Exclusions that are implicit in the denominator definition include:

- Patients at the facility who were 75 years of age and older at initiation of dialysis
- Patients at the facility who were listed on the kidney or kidney-pancreas transplant waitlist prior to the start of dialysis

In addition, patients who were admitted to a skilled nursing facility (SNF) at the time of initiation of dialysis were excluded.

#### **Denominator Exclusion Details (NQF Includes “Exceptions” in the “Exclusion” Field) S.11.**

The CMS Medical Evidence Form and the CMS Long Term Care Minimum Data Set (MDS) were the data sources used for determining skilled nursing facility (SNF) patients. Patients who were identified in Questions 17u and 22 on the CMS Medical Evidence Form as institutionalized and SNF/Long Term Care Facility, respectively, or who had evidence of admission to a skilled nursing facility based on the MDS before their first service date and were not discharged prior to initiation of dialysis were identified as SNF patients.

#### **Stratification Details/Variables S.12.**

N/A

#### **Risk Adjustment Type S.13.**

Statistical risk model

#### **Statistical Risk Model and Variables S.14.**

The denominator represents a facility’s expected number of events (waitlistings or living-donor transplants), and is calculated based on a two-stage Cox model (Cox, 1972; SAS Institute Inc., 2004; Kalbfleisch and Prentice, 2002; Collett, 1994). The SWR is adjusted for age, using a linear spline with knots at 12, 18 and 64. Knot placements were determined empirically based on a preliminary model that categorized age.

#### **Detailed Risk Model Specifications S.15.**

The event was defined as waitlisting or living-donor transplantation. Time zero was defined as the first initiation of dialysis. Patients were followed until waitlisting, living donor transplantation, death, or one year anniversary since first dialysis (i.e., the earliest thereof). A two-stage Cox model was fitted to calculate the expected number of events. At the first stage, Cox model stratified on facility was fitted, in order to obtain an estimate of the age effect (unconfounded by facility) to be used as an offset. At the second stage, a national average baseline hazard was estimated. The national average baseline (from Stage 2) and age adjustment (from Stage 1) were then used to compute the probability of an event for each patient, followed by the total expected number of events at each facility.

**Type of Score S.16.**

Ratio

This measure is calculated as a ratio but can also be expressed as a rate.

**Interpretation of Score S.17.**

Better quality = higher score

**Calculation Algorithm/Measure Logic S.18.**

See S.19

**Calculation Algorithm/Measure Logic Diagram URL or Attachment S.19.**

See Appendix B

**Sampling S.20.**

N/A

**Survey/Patient-Reported Data S.21.**

N/A

**Missing Data S.22.**

N/A

**Data Source S.23.**

Administrative Claims

Electronic Clinical Data: Electronic Clinical Data

Electronic Clinical Data: Registry

**Data Source or Collection Instrument S.24.**

CROWNWeb is the primary data source used for the denominator, risk adjustment (age) and exclusion of patients older than 75 year-old (see information provided under “denominator details”). Organ Procurement and Transplant Network (OPTN) is the data source for numerator. The Nursing Home Minimum Dataset and the CMS Medical Evidence Form (Form CMS-2728) are used to identify SNF patients.

**Data Source or Collection Instrument (Reference) S.25.**

N/A

**Level of Analysis S.26.**

Facility Level

**Care Setting S.27.**

Dialysis Facility

**Composite Performance Measure S.28.**

N/A

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# Appendix A

## Data Dictionary (S.2b.)

Variable	Primary Data Source
Facility CCN #	CMS data sources <sup>*1</sup>
Reporting year and month	CROWNWeb
Waitlist status	Organ Procurement and Transplant Network (OPTN)
Date of Birth	CMS data sources <sup>*1</sup>
Date of First ESRD	Medical Evidence Form (CMS-2728)
Age at the first day of reporting month	CMS data sources <sup>*1</sup>
Nursing home status <sup>*2</sup>	Medical Evidence Form (Form CMS-2728) Question 17u and 22
Nursing home status on the first service date <sup>*2</sup>	CMS Long Term Care Minimum Data Set (MDS)

<sup>\*1</sup>. Multiple data sources include CMS Consolidated Renal Operations in a Web-enabled Network (CROWNWeb), the CMS Annual Facility Survey (Form CMS-2744), Medicare dialysis and hospital payment records, the CMS Medical Evidence Form (Form CMS-2728), transplant data from the Organ Procurement and Transplant Network (OPTN), the Death Notification Form (Form CMS-2746), the Nursing Home Minimum Dataset, the Quality Improvement Evaluation System (QIES) Workbench, which includes data from the Certification and Survey Provider Enhanced Report System (CASPER), the Dialysis Facility Compare (DFC) and the Social Security Death Master File.

Unique patients are identified by using a combination of SSN, first name, surname, gender, Medicare claim number and birth date. A matching process is performed to ensure that minor typos and misspellings do not cause a patient record to fall out of their history. The matching process is able to successfully match 99.5% of patients. The remaining patients have incomplete or incorrect data that does not allow them to be matched.

<sup>\*2</sup>. Exclusion factors

## S.19: Calculation Flow Chart

### Standardized First Kidney Transplant Waitlist Ratio (SWR)

