

Measure Information Form

General Characteristics

Measure ID:	<i>(Auto-generated, when entered into QMIS by the Measures Manager)</i>
Measure Name:	Percentage of the facility's hemodialysis patients with a urea reduction ratio (URR) of 65% or greater in the calendar year
Measure Description:	Eligible Medicare hemodialysis patients at the facility during the calendar year with a median URR value of 65% or higher.

CMS contact:

Thomas Dudley, MS, RN

Consumer Care Need

- Living With Illness

Quality Domain

- Effectiveness

Type of Measure

- Outcome
Outcome Type
Other
Other Outcome Type
Intermediate

Body System:

Kidney/urinary tract
ESRD

Variable Characteristics

Measure Care Setting

- Dialysis Facility

Unit of Measurement

- Facility

Consensus Endorsement Status

Not Endorsed

Consensus Endorsement Process Status

Technical Specifications

Target Population

Age

NA

Gender

- Both Males and Females

Anchor Date

NA

Effective Date

- 4/1/08

Effective date basis

NA

Payer Source

- Medicare

Measure result reported as

- Positive

Current Alignment with CMS

NA

CHI Compliant

- Yes

Method of Data collection

- Electronic only

Numerator statement

Number of eligible Medicare hemodialysis patients at the facility during the calendar year with a median URR value of 65% or higher

Data source

Claim/Encounter Data

Instructions

Medicare outpatient dialysis claims, CMS Program Medical Management and Information System (PMMIS/REMIS), the Standard Information Management System (SIMS) database maintained by the 18 ESRD Networks

Other

Codes

UB-92: URR is reported monthly to CMS on Medicare dialysis claims (UB-92) as one of five categories:

- <60,
- 60-64.9,
- 65-69.9,
- 70-74.9,

- 75+.

For each patient, we determine the median URR category reported for them on the last claim of each month submitted by the facility during the calendar year. If a patient is treated at more than one facility during the year, the median URR category is calculated for him/her separately for each facility based on the claims from each facility only.

Numerator Time Window

One year

Denominator statement

Number of eligible hemodialysis patients at the facility during the calendar year.
- All hemodialysis patients who have had ESRD for at least 6 months (183 days)

Data source

Claim/Encounter Data

Instructions

To be included in a facility's calculation, a patient must have 4 or more eligible claims from the facility. If a patient is treated at more than one facility during the year, the median URR category reported is calculated for him/her separately for each facility based on the claims from each facility only.

Other

Codes

UB-92

Denominator Time Window

One year

Exclusion Criteria

Calculated on the last Medicare hemodialysis claim of each month submitted by the dialysis facility with the following two exclusions:

1. Claims which started before day 183 of ESRD for a patient; and
2. Claims with missing URR category.

Data source

Claim/Encounter Data

Other

Codes

UB-92

Exclusion Criteria Time Window

One year

History**Measure Status**

Implemented

CMS Active Implementation Date

1/1/2001

Measure Developer

- CMS

Intellectual property status

- Public Domain

Measure Source

Adapted

Name of Original Measure

ESRD 1.1 Hemodialysis Adequacy-Measurement of Delivered Hemodialysis Dose

CMS Final Approval Date

1/1/2001

CMS Implementation Use

Dialysis Facility Compare

Attachments**The Measure Justification is a required attachment**

Depending on the measure contract (development/maintenance/reevaluation) and, if the measure is risk adjusted, some of the listed Measures Management System forms may be required

- Risk Adjustment
- Ad Hoc Measure Reevaluation
- Measure Maintenance Reevaluation
- Comprehensive Measure Reevaluation

Other attachments

Comments:

Measure Justification

Measure ID	(Auto-generated when entered into QMIS)
Measure Name	Percentage of the facility's hemodialysis patients with a urea reduction ratio (URR) of 65% or greater in the calendar year
Completed by Initial & Date	CMS Measures Contractor; October 2, 2008
CMS Active Implementation Date	July 1, 2008
Date of Last Review	November 15, 2007

Section I: Importance/Relevance

Epidemiological relevance, Financial relevance, Policy relevance:

Epidemiological relevance

The estimated number of Medicare ESRD patients rose 3.2 percent in 2005, to almost 407,000, while the estimated non-Medicare ESRD population increased to 78,200, growth of 7.9 percent over the previous year. (USRDS 2007 ADR)

Financial relevance

Expenditures for Medicare paid ESRD claims reached \$20 billion in 2005; the one-year growth of 8.4 percent was down slightly from that of 9.9 percent in the prior year (Figure 11.4). Growth in patient obligations slowed from 9.1 to 5.9 percent, with costs of \$3.5 billion. Medicare HMO costs, in contrast, rose 21.1 percent, as they had in the previous year as well, to reach \$1.35 billion. And non-Medicare costs grew 11.3 percent, to \$7.2 billion. After rising in 2004, the rate of increase in total Medicare ESRD spending and in costs per year declined in 2005, to 6.4 and 3.9 percent, respectively (Figure 11.5). Of the total Medicare dollars spent on ESRD in 2005, inpatient and outpatient services each accounted for 36–37 percent— \$6.96 and \$7.15 billion, respectively—while physician/supplier costs were slightly more than one-fifth of the total, at \$4.1 billion (Figure 11.6). Skilled nursing, home health, and hospice together accounted for less than 6 percent of overall costs. (USRDS 2007 ADR)

Policy relevance

This measure has been in use in the Dialysis Facility Reports (formerly Unit-Specific Reports) since 2000 and on the Dialysis Facility Compare (DFC) web site (www.medicare.gov) since 2001, when the Balanced Budget Act (1997) required a system to measure and report the quality of dialysis services under Medicare. The measure is based on DOQI and KDOQI practice guidelines published in 1997, 2000 and 2006, respectively.

The Dialysis Facility Reports are used by the dialysis facilities and ESRD Networks for quality improvement, and by ESRD state surveyors for monitoring and surveillance. This adequacy of dialysis measure in particular is used by ESRD state surveyors in conjunction with other standard criteria for prioritizing and selecting facilities to survey. This measure is reported publicly on the DFC web site to assist patients in selecting dialysis facilities.

Section 2: Scientific Soundness

Explicit evidence base:

Complete one literature citation for each guideline or study on which the measure is based, stating level of evidence and rating scheme used. A suggested format is below; another format may be used.

Literature citation for clinical guideline

Author Last Name/Organization: National Kidney Foundation (NKF)
Author First Name:
Title of Chapter or Article: NKF-K/DOQI Clinical Practice Guidelines for Hemodialysis Adequacy: Update 2006.
Title of Book or Journal: American Journal of Kidney Disease
Publication Date: July 2006
Journal Volume and Number: 48 (1 Suppl 1)
Pages: S17
Web link: http://www.kidney.org/Professionals/kdoqi/guideline_upHD_PD_VA/index.htm
Level of Evidence and Rating Scheme: A

Literature citation for supporting evidence/study

Author Last Name/Organization: Eknoyan G
Author First Name:
Title of Chapter or Article: :Effect of dialysis dose and membrane flux in maintenance hemodialysis-sis
Title of Book or Journal: New England Journal of Medicine
Publication Date: 2002
Journal Volume and Number:347
Pages: :2010-2019
Web link: www.nejm.org
Level of Evidence and Rating Scheme: A

Author Last Name/Organization: Greene T
Author First Name:
Title of Chapter or Article: Association of achieved dialysis dose with mortality in the Hemodialysis Study: An example of dose-targeting bias
Title of Book or Journal: Journal of the American Society of Nephrology
Publication Date: 2005
Journal Volume and Number: 16
Pages: 3371-3380
Web link: www.jasn.org
Level of Evidence and Rating Scheme: B

Author Last Name/Organization: Rocco MV

Author First Name:

Title of Chapter or Article: The effect of dialysis dose and membrane flux on nutritional parameters in Hemodialysis patients: Results of the HEMO Study

Title of Book or Journal: Kidney International

Publication Date: 2004

Journal Volume and Number: 65

Pages: 2321-2334

Web link: <http://www.nature.com/ki/index.html>

Level of Evidence and Rating Scheme: A

Author Last Name/Organization: Unruh M

Author First Name:

Title of Chapter or Article: Effects of Hemodialysis dose and membrane flux on health-related quality of life in the HEMO Study.

Title of Book or Journal: Kidney International

Publication Date: 2004

Journal Volume and Number: 66

Pages: 355-366

Web link: <http://www.nature.com/ki/index.html>

Level of Evidence and Rating Scheme: A

Other aspects of scientific soundness:

Reliability, Validity, and Adequacy of risk adjustment:

In 1999, the Centers for Medicare & Medicaid Services (CMS) funded the development of dialysis facility-specific measures that could be released in reports to the public for their use in making dialysis treatment choices. An extensive public process was used to select the first set of measures to be publicly reported (Frederick 2002). See: Frederick PR, Maxey NL, Clauser SB, & Sugarman JR. Developing Dialysis Facility-Specific Performance Measures for Public Reporting. Health Care Financing Review 2002 Summer; 23(4) pp. 37-50.

Reliability

URR data from dialysis claims have been shown to be in good agreement with data from chart abstraction in Frankenfield et al:

Frankenfield DL, Brier ME, Bedinger MR, Milam RA, Eggers PW, Cain JA, Aronoff GR, Frederick PR. Comparison of Urea Reduction Ratio and Hematocrit Data Reported in Different Data Systems: Results From the Centers for Medicare and Medicaid Services and the Renal Network Inc. Am J Kidney Dis. 41, No 2. 2003: pp 443-441.

Validity

URR data have been validated in a study of CPM data in Frankenfield et al.

Frankenfield DL, Brier ME, Bedinger MR, Milam RA, Eggers PW, Cain JA, Aronoff GR, Frederick PR. Comparison of Urea Reduction Ratio and Hematocrit Data Reported in Different Data Systems: Results From the Centers for Medicare and Medicaid Services and the Renal Network Inc. Am J Kidney Dis. 41, No 2. 2003: pp 443-441.

Adequacy of risk adjustment

Risk adjustment is not applicable for this measure.

Section 3: Usability/Actionability

Provides actionable decision support, Message is clear to recipient, Operational relevance

- This measure has been in use in the Dialysis Facility Reports (formerly Unit-Specific Reports) since 2000 and on the Dialysis Facility Compare (DFC) web site (www.medicare.gov) since 2001, when the Balanced Budget Act (1997) required a system to measure and report the quality of dialysis services under Medicare. The measure is based on DOQI and K\DOQI practice guidelines published in 1997, 2000, and 2006.

The Dialysis Facility Reports are used by the dialysis facilities and ESRD Networks for quality improvement, and by ESRD state surveyors for monitoring and surveillance. This adequacy of dialysis measure in particular is used by ESRD state surveyors in conjunction with other standard criteria for prioritizing and selecting facilities to survey. This measure is reported publicly on the DFC web site to assist patients in selecting dialysis facilities.

The language has been consumer tested.

See:

Trisolini M, Roussel A, Harris S, Bandel K, Salib P, Schatell D, Cell J, Klicko K. Evaluation of the Content of the Dialysis Facility Compare Website: Final Report. Prepared for the Centers for Medicare & Medicaid Services under Contract No. 500-00-0024. Waltham, Massachusetts: RTI International, 2004.

The web site has been tested with focus group(s).

See:

Trisolini M, Zerhusen E, Bandel K, Roussel A, Frederick P, Schatell D, Harris S. Evaluation of the Dialysis Facility Compare Website Tool on Medicare.gov. *Dialysis & Transplantation* 2006 April: pp 1-8.

Section 4: Feasibility

Specifications are well-defined, Reasonable burden of data collection, Minimum distortion

Administrative and Medical Record data is used.

There are no potential barriers to retrieving data necessary for the measure, and there are no data availability issues.

Burden is minimal for current data because it exists.

Comprehensive Reevaluation

<i>Measure ID</i>	(Auto-generated when entered into QMIS)
Measure Set:	DFC Measures
Measure Name:	Percentage of the facility's hemodialysis patients with a urea reduction ratio (URR) of 65% or greater in the calendar year
Measure Description:	Eligible Medicare hemodialysis patients at the facility during the calendar year with a median URR value of 65% or higher.
CMS GTL/PO:	Thomas Dudley, MS, RN

Version Changes

Summarize what has changed in this version?

Patient URR category assignment is based on the median URR category (%) rather than by the modal URR category.

The requirement for inclusion of claims was changed from starting after day 365 of ESRD for a patient to starting after 183 days of ESRD therapy.

For each patient, instead of using all eligible patient claims, the last claim of each month with a non-missing URR category is used for the calculation, resulting in a range of 4-12 claims used in the calculation of the median URR category.

Date of review (NQF approval date(s))
Not approved

I. Summary of Current Performance Data Analysis on Each Measure—(measure data as submitted to NQF).

Attach charts, graphs, or tables, as directed by CMS, that summarize the performance of the measure since it was initially used by CMS (ideally) or at least since it was last evaluated (either at measure inception or previous comprehensive evaluation).

93% of patients on dialysis for 6 months or more and dialyzing three times a week had a mean delivered adequacy dose of spKt/V 1.2 calculated using the Daugirdas II formula (HD Adequacy CPM III) [spKt/V 1.2 is equivalent to a URR of 65%]

Please see attached: DFC_URR_supporting graphs.pdf

Please see page 14 of the 2007 CPM Annual Report for more trends on this measure (link below).

<http://www.cms.hhs.gov/CPMProject/Downloads/ESRDCPMYear2007Report.pdf>

II. Summary of Analysis of the Comments and Questions Received Going into the TEP and during the NQF comment period:

- A. Importance
- B. Scientific Acceptability
- C. Feasibility
- D. Usability

Most of the relevant text can be found in the [C-TEP report](#) (linked).

In the evaluation of the current adequacy of hemodialysis measure, the TEP concluded that the epidemiological and financial relevance of the measure was high. Although, it is restricted to hemodialysis patients, they make up 90% of dialysis patients. Furthermore, inadequate dialysis can cause great mortality and morbidity (frequent hospitalization, etc). The TEP members stressed that using urea kinetics as “the measure of adequacy of hemodialysis” ignores the importance of other factors such as volume and blood pressure control. Therefore, the validity of the measure could be improved by using Kt/V instead of URR. The reliability and validity of the data has been tested previously (Frankenfield 2003), but not recently. Currently, the burden of data collection is minimal since the data are collected electronically on claims data and the procedure is well established. In the future, when we have a 100% collection using the CROWN system, it could represent a substantial burden especially for non-Medicare patients. The billing data are also limited to modifier code ranges, although since we are reporting the percentage of patients above the minimum threshold, so that these categories can be used to categorize according to achieving the KDOQI guideline or not. The language on the website has been consumer tested and the DFC web site has been tested with focus groups by RTI. The TEP concluded that although, satisfactory performance has been achieved by many facilities (93% patients above KDOQI guidelines for $URR \geq 65\%$), for those that have not achieved this level, the reporting of this measure should stimulate quality improvement programs.

III. Environmental scan to identify relevant scientific or other information published since the last time the measure was evaluated.

Document all relevant publications found, with a clear indication of:

- A. The type of information
- B. The level of evidence
- C. The relevant Web address (if the article is accessible via the Web)
- D. A brief synopsis of the information and its relevance to the Comprehensive Reevaluation
 - Example #1 (for new guidelines): “ACC HF guidelines now consider ARBs to be equivalent to ACEIs.”
 - Example #2 (for a study on antibiotics): “Study shows increase in inappropriate use of antibiotics in ER patients since measure was implemented.”

List of Publications is as follows:

1. Fernandez EA, Valtuille R, Presedo JM, Willshaw P., Comparison of different methods for hemodialysis evaluation by means of ROC curves: from artificial intelligence to current methods. *Clinical Nephrology*. 2005 Sep; 64(3):205-13.
2. Stuart L. Goldstein, Andrew Brem, Bradley A. Warady, Barbara Fivush, Diane Frankenfield, Comparison of single-pool and equilibrated Kt/V values for pediatric hemodialysis prescription management: analysis from the Centers for Medicare & Medicaid Services Clinical Performance Measures Project, *Pediatric Nephrology* (2006) 21: 1161–1166
3. Tanja Hojs-Fabjan and Radovan Hojs, Polyneuropathy in hemodialysis patients: The most sensitive electrophysiological parameters and dialysis adequacy *Wien*

Klin Wochenschr (2006) 118 [Suppl 2]: 29–34

4. Korohoda P, Pietrzyk JA, Miklaszewska M, Komorowska M, Rumian R, Drozd D, Krawentek L, Zachwieja K., Does daily hemodialysis influence urea kinetic modeling (UKM) coefficients?--Preliminary report], Przegl Lek. 2006; 63 Suppl 3:194-7.
5. John K. Leypoldt, Bertrand L. Jaber and Deborah L. Zimmerman, Predicting Treatment Dose for Novel Therapies Using Urea Standard Kt/V, Seminars in Dialysis-Vol 17, No 2 (March–April) 2004 pp. 142–145
6. Sridhar Nagaraja Rao, Hurst, Carolyn, Hayes, Patrick, Tandem Dialyzers With Two Monitors to Meet Target KT/V, Dialysis & Kinetics ASAIIO Journal 2005
7. Robert A. Wolfe, Tempie E. Hulbert-Shearson, Valarie B. Ashby, Sangeetha Mahadevan, and Friedrich K. Port, Improvements in Dialysis Patient Mortality Are Associated With Improvements in Urea Reduction Ratio and Hematocrit, 1999 to 2002, American Journal of Kidney Diseases, Vol 45, No 1 (January), 2005: pp 127–135

Literature citation for clinical guideline

Author Last Name/Organization: National Kidney Foundation (NKF)
Author First Name:
Title of Chapter or Article: NKF-K/DOQI Clinical Practice Guidelines for Hemodialysis Adequacy: Update 2006.
Title of Book or Journal: American Journal of Kidney Disease
Publication Date: July 2006
Journal Volume and Number: 48 (1 Suppl 1)
Pages: S17
Web link: http://www.kidney.org/Professionals/kdoqi/guideline_upHD_PD_VA/index.htm
Level of Evidence and Rating Scheme: A

Literature citation for supporting evidence/study

Author Last Name/Organization: Eknayan G
Author First Name:
Title of Chapter or Article: :Effect of dialysis dose and membrane flux in maintenance hemodialysis-sis
Title of Book or Journal: New England Journal of Medicine
Publication Date: 2002
Journal Volume and Number:347
Pages: :2010-2019
Web link: www.nejm.org
Level of Evidence and Rating Scheme: A

Author Last Name/Organization: Greene T
Author First Name:
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Journal Volume and Number: 16
Pages: 3371-3380

Web link: www.jasn.org

Level of Evidence and Rating Scheme: B

Author Last Name/Organization: Rocco MV

Author First Name:

Title of Chapter or Article: The effect of dialysis dose and membrane flux on nutritional parameters in Hemodialysis patients: Results of the HEMO Study

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Pages: 2321-2334

Web link: <http://www.nature.com/ki/index.html>

Level of Evidence and Rating Scheme: A

Author Last Name/Organization: Unruh M

Author First Name:

Title of Chapter or Article: Effects of Hemodialysis dose and membrane flux on health-related quality of life in the HEMO Study.

Title of Book or Journal: Kidney International

Publication Date: 2004

Journal Volume and Number: 66

Pages: 355-366

Web link: <http://www.nature.com/ki/index.html>

Level of Evidence and Rating Scheme: A

IV. A technical expert panel was convened: Yes No

If yes, date(s) of the meeting(s):

Clinical-TEP: September 18-19, 2006

Briefly summarize the TEP recommendations here.

C-TEP recommendations

Currently, DFC reports the percentage of patients in the facility that are receiving at least the minimum dose of 65% for URR. The TEP agreed that the current method in which the adequacy of hemodialysis measure is reported is still consistent with the 2006 KDOQI guideline for the minimum target. However, hemodialysis adequacy could be measured more accurately by using Kt/V instead of URR. The TEP discussed whether or not DFC should report the percentage of patients that are receiving the 2006 KDOQI target dose of 70%. The TEP decided that it would not recommend publicly reporting the percentage of patients receiving the target dose ($Kt/V \geq 1.4$ URR $\geq 70\%$) at this time, however, it is available on the Dialysis Facility Reports for facility review. The TEP also recommended that this measure should be as consistent as possible with the Clinical Performance Measures, subject to constraints of the claims data.

The algorithm for the calculation of the measure was reviewed. The TEP recommended that the patient URR category assignment should be based on the median URR category rather than by the modal URR category. The TEP also recommended that the requirement for inclusion of claims should be changed from starting after day 365 of ESRD for a patient to starting after 31 days of ESRD therapy.

TEP Recommendations for DFC Hemodialysis Adequacy

1. Hemodialysis adequacy could be measured more accurately by using Kt/V instead of URR. Kt/V calculations should be either derived from UKM or Daugirdas II formulae.
2. Patient URR category assignment should be based on the median URR category (%) rather than by the modal URR category.
3. The requirement for inclusion of claims should be changed from starting after day 365 of ESRD for a patient to starting after 31 days of ESRD therapy.
4. This measure should be as consistent as possible with the recommendations of the Clinical Performance Measures Hemodialysis Adequacy TEP, subject to constraints of the claims data.

V. If any of the codes used in the technical specifications have changed since the last measure update or comprehensive reevaluation, specify the change(s) with an explanation of its impact on the measure.

NA

VI. If material¹ changes to the measure have occurred — i.e., wording, data elements, time periods, abstraction instructions, etc. — document them here. If material changes were made to the measure, was the measure tested?

Yes No

If yes, indicate the results of the testing.

¹ A **material change** is one that changes the intended meaning of the measure or the strength of the measure in terms of measure evaluation criteria. NQF's process for an ad hoc expedited review will be triggered at any point when the measure developer make material changes to the measure construct (including the numerator, denominator, and exclusions) or measure logic. The timing of the ad hoc review will depend on whether there is an accompanying safety concern. If changes to the measure are deemed appropriate:

- Would a change in the measure result in statistical discontinuity from the current measurement baseline?
- Would a change in the measure significantly impact current processes and the burden for data collection, analysis, and reporting?
- Would the proposed change unintentionally result in the modification of a current clinical or administrative practice?

Measure Contractor Recommended Disposition			
Measure contractor recommended disposition of the measure	<input type="checkbox"/> Retain		
		Effective Date of Action	
	<input checked="" type="checkbox"/> Revise (as described above)		
	<input type="checkbox"/> Replace		
	<input type="checkbox"/> Rotate		
	<input type="checkbox"/> Retire		
Rationale for recommendation	The algorithm for the calculation of the measure was reviewed. The TEP recommended that the patient URR category assignment should be based on the median URR category rather than by the modal URR category. The TEP also recommended that the requirement for inclusion of claims should be changed from starting after day 365 of ESRD for a patient to starting after 31 days of ESRD therapy. The six-month exclusion period was used as a proxy to exclude patients with residual renal function. CMS thought that was necessary because the distribution of patients on dialysis for 90 days to 6 months varied widely across facilities. The current data collection system does not capture residual renal function.		
Effective date basis	<input type="checkbox"/> Discharges	<input type="checkbox"/> Admissions	<input type="checkbox"/> Service Date <input type="checkbox"/> Other:
Recommended by	Name: Date:		

CMS Role	
CMS decision for measure disposition	<input type="checkbox"/> Retain
	Effective Date of Action
	<input type="checkbox"/> Revise
	<input type="checkbox"/> Replace
<input type="checkbox"/> Approved as recommended.	<input type="checkbox"/> Rotate
	<input type="checkbox"/> Retire
Comments about decision	
Approved by	Name: Date: