

**Guide to the  
Supplement to the 2010 Dialysis Facility  
Reports for Dialysis Patients:**

*Overview, Methodology, and Interpretation*

*July 2010*

## Guide to the Supplement to the 2010 Dialysis Facility Reports for Dialysis Patients: Overview, Methodology, and Interpretation

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## ***I. Purpose of this Guide and Supplement to the Dialysis Facility Reports***

This guide explains in detail the contents of the Supplement to the 2010 Dialysis Facility Reports that were prepared for each dialysis facility under contract to the Centers for Medicare & Medicaid Services. Included here are the reports' objectives, discussions of methodological issues relevant to particular sections of each report and descriptions of each data summary.

## ***II. Overview***

The University of Michigan Kidney Epidemiology and Cost Center (UM-KECC) has produced the Supplement to the 2010 Dialysis Facility Reports (DFR) with funding from the Centers for Medicare & Medicaid Services (CMS). Each facility's Supplement to the DFR is available to the facility on the secure Dialysis Reports Web site ([www.dialysisreports.org](http://www.dialysisreports.org)). Unlike the DFR, state agencies responsible for certifying dialysis facilities will not have access to the Supplemental Reports.

The Supplement to the DFR for 2010 includes statistics on influenza vaccination, emergency department visits, and hospital readmissions, as well as graphical summaries of selected information from the DFR. In addition, a table of selected DFR statistics restricted to pediatric patients is included for those facilities treating at least 5 patients under age 18 in any of the reporting years.

The Supplemental Reports are structured in the same way as the DFR and are compiled using the same data sources. The statistics in the Supplement are new this year and may be added to the DFR in the future. We hope to get feedback from facilities on the clarity, accuracy, and utility of the statistics in the supplement. You will find information on how to directly provide feedback to UM-KECC in Section VII.

Each Supplement provides summary data on each facility's dialysis patients for the years 2006-2009. We compiled these summaries using the UM-KECC ESRD patient database, which is largely derived from the CMS Program Medical Management and Information System (PMMIS/REMIS), the Standard Information Management System (SIMS) database maintained by the 18 ESRD Networks, 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), and the Social Security Death Master File. The database is comprehensive for Medicare patients. Non-Medicare patients are included in all sources except for the Medicare payment records. SIMS provides tracking by dialysis provider and treatment modality for non-Medicare patients.

This guide discusses the meaning of the data summaries each table provides, and describes the methodology used to calculate each summary (Sections III and VI).

Sections V and VI provide only a brief description of the data since the summaries are described in greater detail in the *Guide to the Dialysis Facility Report*.

The report starts with two or three tables which contain detailed information for your facility, followed by graphics that allow for a visual comparison of key measures from your facility to the regional summaries.

Each row of a table in the report summarizes an item. Your facility has a column for each time period, and three columns for the corresponding geographical summaries, including averages for your facility's state, its ESRD Network, and the entire nation. Whenever the statistic reported was a count ( $n$ ), we calculated regional and national averages by taking the average count for all facilities in that area. When the statistic reported for a period included more than one year, we annualized regional and national values to make them comparable to a single-year period. When a statistic was a percent, rate, or ratio, we calculated regional and national summaries by pooling together all individual patients in that area to obtain an estimate for that area as if it were one large facility. We do not report state summary data for dialysis facilities in states or U.S. territories with only one or two dialysis units. We do provide summaries for the geographic aggregate of the ESRD Network and the nation for facilities in these states or territories.

### ***III. Influenza Vaccination Summary for Medicare Dialysis Patients Treated on December 31<sup>st</sup> of Each Year, 2006-2008***

This table reports influenza vaccination summary statistics identified on Medicare claims for Medicare dialysis patients treated on December 31<sup>st</sup> of each year in your facility. Average values for 2008 are also reported among patients in your state, Network, and the U.S. In an effort to emphasize the use of vaccine prior to the peak of flu season, we provide vaccination summaries from September 1<sup>st</sup> through December 31<sup>st</sup> each year as well as the overall vaccination summary for the full influenza season (September 1<sup>st</sup> through March 31<sup>st</sup>).

Like the hospitalization and comorbidity tables reported in the Dialysis Facility Report (DFR), this table is limited to patients who are covered by Medicare. To achieve this goal, we use the criterion described in Section V of the *Guide to the 2010 DFR* for the hospitalization statistics. This table is then further restricted to patients being treated at the facility at the end of each year. The 60-day transfer rule does not apply, and we include patients new to dialysis (the 90-day rule does not apply).

As noted in Sections V and XII of the *Guide to the 2010 DFR*, if less than 30% of the original time at risk (1b) at a facility satisfies the criterion for inclusion in the hospitalization statistics for any year, no hospitalization statistics are reported for the facility. Similarly, if fewer than 30% of the patients being treated on December 31 at the facility (8a) meet the inclusion criteria for any year, no comorbidity statistics are reported for the facility. The influenza vaccination statistics are also not reported for these

facilities. Again, statistics for such facilities would not be representative of the patients treated at the facility.

***Eligible Patients on 12/31 (S1a)***

Row S2a reports the number of Medicare dialysis patients included in the influenza vaccination summaries.

***Patients Vaccinated between Sep. 1 and Dec. 31 (S1b)***

Row S2b reports the percentage of patients in S2a who were vaccinated between September 1<sup>st</sup> and December 31<sup>st</sup>, with the corresponding national percentage for 2008 reported for comparison.

***P-value for Patients Vaccinated between Sep. 1 and Dec. 31 (S1c)***

We used a one-sided p-value to test the hypothesis that the true percentage of patients vaccinated, reported in row S1b, is higher (or lower) than the U.S. value for that year. Footnote 3 shows the percentage of patients vaccinated in the U.S. for each year used in this comparison. The p-value indicates the probability that the difference between the percentages of patients vaccinated in your facility and in the U.S. occurred due to chance. A low p-value means that the chances are low that the facility percentage was higher or lower than the national average merely because of random variation. A p-value of less than 0.05 usually indicates a statistically significant result. You should also use the absolute magnitude of the difference between your facility and national percentage of patients vaccinated to determine its clinical importance.

***Patients Vaccinated between Sep. 1 and Mar. 31 (S1d)***

Row S1d reports the percentage of patients in S1a who were vaccinated between September 1<sup>st</sup> and March 31<sup>st</sup>, with the corresponding national percentage for 2008 reported for comparison.

***P-value for Patients Vaccinated between Sep. 1 and Mar. 31 (S1e)***

We used a one-sided p-value to test the hypothesis that the true percentage of patients vaccinated, reported in row S1d, is higher (or lower) than the U.S. value for that year. Footnote 4 shows the percentage of patients vaccinated in the U.S. for each year used in this comparison.

***Patient Characteristics (S1f- S1g)***

Lines S1f and S1g break down the information in lines S1a and S1b by various patient characteristics. Line S1g reports the patient counts by age, sex, race and ethnicity, and years of ESRD treatment. These counts sum to line S1a for each set of categories. Line S1f reports the percentage of patients in each category in S1g who were vaccinated between September 1<sup>st</sup> and December 31<sup>st</sup>. State, Network, and U.S. averages for 2008 are given for comparison.

#### ***IV. Supplementary Hospitalization Statistics, 2006-2008***

This table reports emergency department visit and hospital readmission statistics for Medicare dialysis patients treated in your facility during each year. Average values for 2006-2008 are also reported among patients in your state, Network, and the U.S.

Like the hospitalization and comorbidity tables reported in the Dialysis Facility Report (DFR), this table is limited to patients who are covered by Medicare. To achieve this goal, we use the criterion described in Section V *Guide to the 2010 DFR* for the hospitalization statistics.

As noted in Sections V and XII of the *Guide to the 2010 DFR*, if less than 30% of the original time at risk (1b) at a facility satisfies the criterion for inclusion in the hospitalization statistics for any year, no hospitalization statistics are reported for the facility. The supplementary hospitalization statistics are also not reported for these facilities. Statistics for such facilities would not be representative of the patients treated at the facility.

##### ***Medicare dialysis patients (S2a)***

The number of Medicare dialysis patients reported in S2a is the same as the number of Medicare dialysis patients reported in 2a of the DFR. This statistic is repeated in the Supplement because it is required to calculate the supplementary hospitalization statistics.

The number of Medicare dialysis patients included in the hospitalization summaries is generally smaller than the number of patients included in the mortality summaries. We calculated hospitalization rates based only on periods in which dialysis patients had satisfied the Medicare payment criterion as described in Section V of the *Guide to the 2010 Dialysis Facility Reports*.

##### ***Medicare patient years (MPY) at risk (S2b)***

The number of Medicare patient years (MPY) at risk reported in S2b is the same as the number of Medicare patient years (MPY) at risk reported in 2b of the DFR. This statistic is repeated in the Supplement because it is required to calculate the supplementary hospitalization statistics.

The number of patient years at risk indicates the total amount of time we followed patients in this table's analyses. Patients were at risk for spending another day in the hospital whether or not they were hospitalized at the time. For all patients, time at risk began at the start of the facility treatment period (see Section III of the *Guide to the 2010 Dialysis Facility Reports*) and continued until the earliest occurrence of the following: three days prior to a transplant; date of death; end of facility treatment; or December 31 of the year. Since a facility may have treated a patient for multiple periods during the same year, patient years at risk includes time at risk for all periods of treatment at your facility.

***Total admissions (S2c)***

The total number of admissions reported in S2c is the same as the total number of admissions reported in 2h of the DFR. This statistic is repeated in the Supplement because it is required to calculate the supplementary hospitalization statistics.

This is the total number of inpatient hospital admissions among the Medicare dialysis patients assigned to this facility. The total number of admissions includes multiple admissions (i.e., second, third, etc. hospitalizations for the same patient). If a patient was admitted near the end of one year and not discharged until the following calendar year (e.g., admitted on 12/28/2006 and discharged on 1/6/2007), the admission would count only in the first year (one admission in 2006 and zero admissions in 2007).

**Emergency Department (ED) Statistics*****Total ED visits (S2d)***

This is the total number of emergency department (ED) visits among the Medicare dialysis patients assigned to this facility. The total number of ED visits includes multiple visits (i.e., second, third, etc. visits for the same patient). This includes both ED visits that result in inpatient admission and those that do not result in admission.

***Expected total ED visits (S2e)***

The expected number of ED visits among Medicare dialysis patients in a facility for 2006-2008 is calculated based on national rates of ED visits. The expected number of ED visits is calculated from a Cox model, adjusting for patient age, race, ethnicity, sex, diabetes, duration of ESRD, nursing home status, patient comorbidities at incidence, body mass index (BMI) at incidence, and calendar year. Duration of ESRD is divided into six intervals with cut points at 6 months, 1 year, 2 years, 3 years and 5 years and ED visit rates are estimated separately within each interval. For each patient, the time at risk in each ESRD interval is multiplied by the (adjusted) national ED visit rate for that interval, and a sum over the intervals gives the expected number of ED visits for each patient. For each patient, the expected number is adjusted for the characteristics of that patient and summing over all patients gives the result reported in S2e).

***ED visits per MPY (S2f)***

We calculated the ED visits per patient year by dividing the total number of ED visits in S2d by the total number of patient years at risk in S2b. This value represents the average number of ED visits per year for patients in your facility. We expressed the number of ED visits relative to the total number of patient years (rather than the number of patients) because many patients do not receive treatment for a full calendar year.

***Expected ED visits per MPY (S2g)***

The expected ED visits per patient year is obtained by dividing the expected ED visits in S2e by the number of patient years at risk in S2b. We expressed the expected number of ED visits relative to the total number of patient years (rather than the number of patients) because many patients do not receive treatment for a full calendar year.

***Standardized Hospitalization Ratio for ED (S2h)***

The SHR (ED) is calculated by dividing the observed total ED visits in S2d by the expected total ED visits in S2e. As with the SMR, it enables a comparison of your facility's experience to the national average. A value of less than 1.0 indicates that your facility's total number ED visits was less than expected, based on national rates; whereas a value of greater than 1.0 indicates that your facility had a rate of ED visits higher than the national average. Note that this measure is adjusted for the actual patient characteristics of age, race, ethnicity, sex, diabetes, duration of ESRD, nursing home status, comorbidities at incidence, and BMI in your facility.

***Patients with ED visit (S2i)***

Row S2i reports the percentage of Medicare dialysis patients assigned to this facility in S2a that had at least one ED visit. If a patient had more than one ED visit during the year, they were counted only once in the numerator of this statistic.

***ED visits that result in hospitalization (S2j)***

Row S2j reports the percentage of ED visits in S2d that resulted in an inpatient admission.

***Admissions that originated in the ED (S2k)***

Row S2k reports the percentage of inpatient admissions in S2c that originated in the Emergency Department. This percentage may exceed 100% because adjacent inpatient admissions for the same patient are combined for S2c. In particular, if a patient is discharged from the hospital but is readmitted within 1 day of discharge, we combine the two inpatient admissions and thus these admissions will only be counted once in S2c. However, if both of the inpatient admissions originated in the Emergency Department, then 2 ED visits will be included in the numerator. For this reason, for a very small number of facilities, row S2k will exceed 100%.

**Readmission Statistics*****Readmissions within 30 days (S2l)***

Row S2l reports the number of inpatient hospitalizations for Medicare dialysis patients that were followed by a readmission within 30 days of discharge.

***Admissions that result in readmission within 30 days (S2m)***

Row S2m reports the percentage of inpatient admissions in S2c that resulted in readmission within 30 days of discharge.

***V. Selected Measures for Dialysis Patients under Age 18 (2006-2009)***

This table reports selected measures from the Dialysis Facility Report tables restricted to the pediatric population. This table compares the characteristics of your facility's pediatric patients, their patterns of treatment, and patterns in transplantation, hospitalization, and mortality to local and national averages. This table is created only for those facilities that treated at least five pediatric patients in any single year over the

four year period (as reported in item 1a of Table 1 of the DFR). All pediatric patients, even those at facilities treating very few pediatric patients are include in the regional averages.

Since item numbers in this pediatric table correspond with the same item number in the parent table, please refer to parent section of the *Guide to the 2010 Dialysis Facility Reports (DFR Guide)* for more information on the pediatric measures described below. For example, S3.1a is the same measure as item 1a of Table 1 of the DFR, but restricted to pediatric patients only.

The pediatric mortality, hospitalization, and transplantation measures for your facility are shown for each year and as well as for the three- or four-year period combined. Regional summaries for these patient outcomes are shown for the three- or four-year period in order to provide more stable estimates, The remaining sections report patient characteristics and practice patterns for your facility each year from 2006-2009, as well as regional averages for 2009 for comparison.

Because pediatric patients make up a very small proportion of dialysis patients nationally, the average number of pediatric patients per facility is extremely low. These average counts are not useful for comparison with counts from facilities treating more pediatric patients, so the state, Network, and U.S. average counts have been suppressed from the table. The regional percentages shown for comparison are calculated based on all pediatric patients in the state, Network or U.S.

#### ***Mortality Summary for All Pediatric Dialysis Patients, 2006-2009***

This section of Table S3 (lines S3.1a-S3.1e) provides information about patient mortality for all pediatric dialysis patients treated at your facility corresponding to measures in Table 1 of the DFR. We reported information on the mortality of all prevalent pediatric dialysis patients for each year between 2006 and 2009, and also summarized the statistic for the four-year period, 2006-2009. We also reported the percentages for the average facility in your state, your ESRD Network, and the nation for this combined four-year period. As stated above, regional and national averages of the counts are not reported. Please refer to section IV of the *DFR Guide* for more information.

#### ***Hospitalization Summary for Pediatric Medicare Dialysis Patients, 2006-2008***

This section of Table S3 provides information about hospitalizations for all pediatric dialysis patients treated at your facility corresponding to measures in Table 2 of the DFR. Summaries of the total number of hospitalized days (lines S3.2c- S3.2e) and total number of admissions (S3.2h- S3.2j) among pediatric Medicare dialysis patients are reported for each year from 2006-2008 and for the entire three-year period. We also report the percentages for the average facility over the combined 2006-2008 period for regional and national facilities. Please refer to section V of the *DFR Guide* for more information.

#### ***Waitlist Summary for Pediatric Dialysis Patients, 2006-2009***

This section of Table S.3 (S3.4a-S3.4e) reports waitlist summaries for all pediatric dialysis patients treated at your facility for each year from 2006-2009 corresponding to

measures in Table 4 of the DFR. We also report the percentages for the average facility for 2009 for regional and national facilities. Please refer to section VII of the *DFR Guide* for more information.

### ***Modality, Hemoglobin, and Urea Reduction Ratio, 2006-2009***

This section of Table S.3 (lines S3.5a- S3.5i) reports information on facility practice patterns corresponding to measures in Table 5 of the DFR. The inclusion criteria for each section are described in more detail below. Summaries are reported for each year between 2006 and 2009 and State, Network, and U.S. summaries are reported for 2009 only. Please refer to section VIII of the *DFR Guide* for more information.

### ***Characteristics of New Pediatric Dialysis Patients, 2006-2009 (Form CMS-2728)***

This section of Table S.3 (S3.7a- S3.7g, S3.7k- S3.7m, 7s-7t) presents data from the ESRD Medical Evidence Form (Form CMS-2728) on the characteristics of new pediatric patients in your facility by year. These statistics correspond to measures in Table 7 of the DFR. State, Network and national percentages for 2009 are also shown for comparison. Averages of the counts for regional and national facilities have been suppressed (see above). The patients represented in this table were hemodialysis and peritoneal dialysis patients who **started dialysis** between January 1, 2006 and December 31, 2009. Please note that we placed the patients according to the provider number that appeared on their Medical Evidence Forms.

For each patient characteristic, we present the average value for your facility as well as state, Network, and U.S. percentages. We excluded from the calculations values for individual patients which fell outside the ranges shown in brackets [] on this table because we considered them to be clinically implausible. Please refer to section X of the *DFR Guide* for more information.

### ***Summaries for All Pediatric Dialysis Patients Treated as of December 31 of Each Year, 2006-2009***

This section of Table S.3 (lines S3.8a, S3.8c-8g, S3.8i, S3.8k) summarizes the characteristics of pediatric dialysis patients treated on December 31, 2006-2009 in your facility, with corresponding percentages for 2009 among patients in your state, ESRD Network, and the U.S. These statistics correspond to measures in Table 8 of the DFR. Averages of the counts for regional and national facilities have been suppressed (see above). Please refer to section XI of the *DFR Guide* for more information.

## ***VI. Graphics, 2006-2009***

Selected measures from the Dialysis Facility Report are displayed graphically. Please see the corresponding section of the *Guide to the 2010 DFRs* for more information on these measures.

**VII. Please Give Us Your Comments**

We welcome questions or comments about this report's content, or any suggestions you might have for future reports of this type. Improvements in the content of future reports will depend on feedback from the nephrology community. Comments can be submitted on [www.DialysisReports.org](http://www.DialysisReports.org) between July 12, 2010 and August 18, 2010. If you have questions after the comment period is over, please contact The University of Michigan Kidney Epidemiology and Cost Center (UM-KECC) directly by email, fax, or mail. Please note "2010 Dialysis Facility Reports" as the topic of your correspondence, and include your contact information and facility's Medicare provider number.

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