

2006 End Stage Renal Disease Clinical Performance Measures Reliability Report

Submitted to:

Pamela Frederick, MSB, Director
Division of Acute & Chronic Disease Management
Quality Measurement & Health Assessment Group
Office of Clinical Standards & Quality
Centers for Medicare & Medicaid Services
7500 Security Blvd
Baltimore, MD 21244

May 2007

Submitted by:

Arbor Research Collaborative for Health
315 W. Huron, Suite 360
Ann Arbor, MI 48103

This material was prepared by Arbor Research Collaborative for Health, under a contract (Contract No. HHSM-500-2005-00031I, Task Order No. 0001) with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. Submitted May, 2007.

Table of Contents

2006 ESRD CPM Reliability Report, Part I

Executive Summary	1
Introduction	3
Background	3
Project Methods.....	4
Results	6
Hemodialysis Data Elements	6
Peritoneal Dialysis Data Elements.....	7
Reliability from Year to Year.....	8
Conclusions	8

Tables

Table 1: Calculation of data concurrence and Kappa Statistics.....	10
--	----

Hemodialysis Data Elements

Table 2: Comparison of categorical data abstracted by dialysis facility staff to categorical data re-abstracted by ESRD Network staff for selected hemodialysis data elements.....	11
Table 3: Comparison of means for continuous data abstracted by dialysis facility staff to continuous data re-abstracted by ESRD Network staff for selected hemodialysis data elements (excluding data elements related to vascular access).....	13
Table 4: Recorded weekly single-pooled Kt/V [Question 17G].....	17
Table 5: Method used to calculate the recorded single-pooled Kt/V [Question 17H].....	18
Table 6: Hemoglobin \geq 9gm/dL [Question 15A].....	20
Table 7: Hemoglobin \geq 11gm/dL [Question 15A].....	21
Table 8: Serum ferritin concentration [Question 15C]	22
Table 9: Percent transferrin saturation \geq 20% [Question 15D].....	23

Table 10: Epoetin prescription [Question 15B1a]	24
Table 11: Serum calcium values (<8.4, 8.4-9.5, >9.5 mg/dL) [Question 16A]	25
Table 12: Serum phosphorus values (≥ 5.5 mg/dL) [Question 16A]	26
Table 13: Serum albumin values ($\geq 3.5/3.2$ gm/dL by BCG/BCP methods) [Question 16C and 16D]	27
Table 14: Laboratory method used to measure serum albumin in Table 13 [Question 16D]	28
Table 15: The type of access used on the last hemodialysis session on or between October 1, 2005 and December 31, 2005 [Question 18A]	29
Table 16: Reason for catheter or port access, if used for access between October 1, 2005 and December 31, 2005 [Question 18C1]	30
Table 17: Catheter or port access used exclusively as access ≥ 90 days between October 1, 2005 and December 31, 2005 [Question 18C2]	31
Table 18: The presence of routine monitoring for stenosis when AV grafts or AV fistulae were used for access between October 1, 2005 and December 31, 2005 [Question 18B1]	31
Table 19a-e: The routine stenosis monitoring method used between October 1, 2005 and December 31, 2005 when AV grafts or AV fistulae were used for access [Question 18B2]	32
Table 20: The type of access used at the initiation of a maintenance course of hemodialysis, if between January 1, 2005 and August 31, 2005 [Question 19A]	34
Table 21: The type of access used 90 days after the date in Table 20 during the initiation of hemodialysis, if between January 1, 2005 and August 31, 2005 [Question 19B]	35
Table 22: Number of prescribed hemodialysis times per week [Question 17A]	36
Table 23: Ethnicity [Question 13]	37
Table 24: Agreement rate of data abstracted by dialysis facility staff to data re-abstracted by ESRD Network staff for selected hemodialysis data elements	38

Peritoneal Dialysis Data Elements

Table 25: Comparison of categorical data abstracted by dialysis facility staff to categorical data re-abstracted by ESRD Network staff for selected peritoneal dialysis data elements	39
---	----

Table 26: Comparison of means for continuous data abstracted by dialysis facility staff to continuous data re-abstracted by ESRD Network staff for selected peritoneal dialysis data elements	40
Table 27: Total weekly Kt/V_{urea} [Question 17D & 19D]	44
Table 28: Method by which V was calculated in the total weekly Kt/V_{urea} [Question 17E & 19E].....	45
Table 29: Reported weekly creatinine clearance [Question 17G & 19G].....	46
Table 30: Weekly creatinine clearance corrected for body surface area [Question 17G & 19G].....	47
Table 31: Units for creatinine clearance measure [Question 17G & 19G].....	48
Table 32: Is creatinine clearance corrected for body surface area, using standard methods? [Question 17F & 19F]	49
Table 33: Hemoglobin ≥ 9 gm/dL [Question 15A].....	50
Table 34: Hemoglobin ≥ 11 gm/dL [Question 15A].....	51
Table 35: Serum ferritin concentration [Question 15C]	52
Table 36: Percent transferrin saturation [Question 15D]	53
Table 37: Epoetin prescription [Question 15B1a]	54
Table 38: Serum calcium values (< 8.4, 8.4-9.5, > 9.5 mg/dL) [Question 16A]	55
Table 39: Serum phosphorus values (≥ 5.5 mg/dL) [Question 16B]	56
Table 40: Serum albumin values ($\geq 3.5/3.2$ gm/dL by BCG/BCP methods) [Question 16C & 16D].....	57
Table 41: Laboratory method used to measure serum albumin in table 40 [Question 16D]	58
Table 42: Prescription changed [Question 18 & 20].....	59
Table 43: Ethnicity [Question 13].....	60
Table 44: Agreement rate of data abstracted by dialysis facility staff to data re-abstracted by ESRD Network staff for selected peritoneal dialysis data elements	61

2005 ESRD CPM Reliability Report, Part II

Supplemental LDO Report	62
Table A: Percent Concurrence of Original (Electronic) and Revised LDO Data Compared to Network Abstracted Data by LDO for Hemodialysis Patients	63
Table B: Percent Concurrence of Original (Electronic) and Revised LDO Data Compared to Network Abstracted Data by LDO for Peritoneal Dialysis Patients.....	68

2006 End-Stage Renal Disease Clinical Performance Measures Reliability Report Executive Summary

Background

In 2006, Arbor Research Collaborative for Health (Arbor Research) was selected by the Centers for Medicare & Medicaid Services (CMS) to analyze the inter-rater reliability for the data collected for the End-Stage Renal Disease Clinical Performance Measures (CPM) Project. Prior to 2005, Qualis Health produced this report. This project is a component of the Medicare End-Stage Renal Disease (ESRD) Program, which was established in 1972 under the Social Security Act.

For the 2006 ESRD CPM Project, adult hemodialysis and peritoneal dialysis patients for the study were identified through a random sample at the national level and all pediatric patients (the identified universe) were also selected. Facilities that were not part of one of the five Large Dialysis Organizations (LDOs) submitted manually collected data from the medical records of their sampled patients. The LDOs abstracted all of the data elements electronically from their corporate data repositories for their sampled patients. Together, these data are referred to as facility-abstracted data throughout. The reliability sample was obtained by randomly selecting a sufficient number of patient records for each of the LDOs and for the group of non-LDO facilities to obtain stable estimates. Fifty (50) hemodialysis patient records were randomly selected from each of five of the LDOs and for the group of non-LDO facilities. For peritoneal dialysis patients, 30 patient records were selected from each group. The ESRD Networks were asked to re-abstract the data for these patients from medical records.

Sixteen pediatric hemodialysis patients and 48 pediatric peritoneal dialysis patients were chosen at random and are included in this report along with adult patients.

The facility-abstracted data and Network re-abstracted data were sent to Arbor Research to analyze and assess the extent to which there was concurrence between the two data files—the inter-rater reliability. For this year's report, the section titled *ESRD CPM Reliability Report, Part II* breaks out the sample by each LDO and the group of non-LDO facilities.

Project Methods

To analyze the inter-rater reliability of the ESRD CPM data, the software program SAS for Windows, version 9.1 was used to compute agreement rates, levels of concurrence, and kappa statistics. Agreement rates were calculated for continuous data, and kappa statistics and levels of concurrence were jointly used to analyze categorical data.

Inter-rater reliability statistics were calculated for the following in-center hemodialysis and peritoneal dialysis categories of data elements: adequacy of dialysis, anemia management, serum albumin, mineral metabolism, and other data elements such as ethnicity. In addition, for in-center hemodialysis, statistics on vascular access were calculated.

Results

Hemodialysis Data Elements

In comparing the data collection forms used by the facilities and Networks to abstract data for the hemodialysis data elements, matched forms were available for the 300 randomly selected medical records. An analysis of the categorical data abstracted by facilities and Networks for these CPMs showed almost perfect to substantial agreement for all the data elements relating to adequacy of dialysis, anemia management, serum albumin, and vascular access.

The inter-rater reliability analysis for each of the non-skip pattern tested data elements showed agreement that ranged from moderate to perfect as calculated by the kappa statistic (kappa range: 0.41 to 1.00), and the level of concurrence for non-missing values was acceptable ($\geq 90\%$) for 41 out of 48 data elements (Tables 4-23). The agreement rates for facility data compared to Network data for selected hemodialysis data elements were acceptable ($\geq 82\%$) for all 13 elements (Table 24).

Peritoneal Dialysis Data Elements

For the peritoneal dialysis data elements, facility and Network record abstraction provided 180 matched data collection forms. A comparison of the categorical data abstracted for selected data elements showed that agreement ranged from low to almost perfect.

The inter-rater reliability analysis for each of the tested data elements showed agreement that ranged from below moderate to almost perfect as calculated by the kappa statistic (kappa range: 0.37 to 1.00), and the level of concurrence for non-missing values was acceptable ($\geq 90\%$) for 36 out of 42 data elements (Tables 27-43). The agreement rates for facility data compared to Network data for selected peritoneal dialysis data elements were acceptable ($\geq 80\%$) for 18 out of 23 elements (Table 44).

Reliability from Year to Year

In 2006, the inter-rater reliability of a number of data elements improved over 2005. Significant improvements were observed for 11 data elements. An item's kappa statistic was considered to have improved significantly in 2006 if it had a ≥ 0.1 increase over 2005 and a shift upward in its categorical agreement rating. Likewise, an item's kappa statistic was considered to have declined significantly if it had a ≥ 0.1 decrease from the previous year and there was a shift downwards in its categorical agreement rating. In 2006, a decline was observed for four data elements.

In 2006, there was less discrepancy in missing values between the network re-abstraction and

the facility abstraction. Of the 31 peritoneal dialysis data elements, the number of missing observations for the network and the facility data was within one for ten variables, with four variables having more missing data in the facility abstraction than the network. There were still nine variables where the network re-abstraction had five or more missing values that were not missing in the facility data. This represents an improvement over 2005.

Conclusions

This report shows that, overall, there was a high rate of agreement between data abstraction conducted by dialysis facility staff and re-abstraction of records by ESRD Network staff. For data elements that had low inter-rater reliability, several possibilities may have accounted for the findings. Among them were: lack of clear instructions, failure of abstractors to follow instructions, inaccurate data submitted electronically by corporate data repositories, inaccurate completion of the data collection forms, statistical factors related to sample size, and unbalanced marginal totals.

An identified limitation of this study was the relatively small sample of cases that could be re-abstracted with available resources. It is also important to note that this study examined inter-rater reliability rather than validity.

Introduction

In 2006, the Centers for Medicare & Medicaid Services (CMS) contracted with Arbor Research Collaborative for Health (Arbor Research) a not-for-profit organization established for the purpose of collecting information and conducting worldwide epidemiologic, clinical, and economic studies of kidney diseases and organ transplantation, to analyze the inter-rater reliability of the data collection associated with the Clinical Performance Measures (CPMs) Project for End-Stage Renal Disease (ESRD). This report presents the results of the inter-rater reliability study.

Background

In 1994, CMS collaborated with the ESRD Networks and the renal community to begin a new approach to assessing and improving health care provided to Medicare ESRD patients—the ESRD Health Care Quality Improvement Program (HCQIP). The key goal of the ESRD HCQIP is to increase, to the greatest extent possible, the number of ESRD patients who receive treatment consistent with current standards of care.

The first activity conducted as part of the ESRD HCQIP was to initiate the National/Network ESRD Core Indicators Project (CIP). The ESRD CIP was CMS's first nationwide population-based study designed to assess and identify opportunities to improve the care of patients with ESRD. This project established the first consistent clinical database for ESRD. The elements included in the database represent clinical measures thought to be indicative of key components of care surrounding dialysis. As such, the data points were considered "indicators" useful for triggering improvement activities.

In 1998, CMS responded to Section 4558(b) of the Balanced Budget Act (BBA) by initiating a project to develop ESRD CPMs based on the National Kidney Foundation's Disease Outcomes Quality Initiative (DOQI). CMS contracted with Qualis Health to develop CPMs

in each of the four topic areas addressed in the DOQI guidelines. Sixteen ESRD CPMs were developed: five for hemodialysis adequacy, three for peritoneal dialysis adequacy, four for anemia management, and four for vascular access. These initial CPMs were intended to assist dialysis facility staff, ESRD Networks, dialysis patients, and other stakeholders in conducting quality improvement initiatives and activities.

For information regarding the development of the CPMs, please see the article, "Developing Clinical Performance Measures Based on the Dialysis Outcomes Quality Initiative Clinical Practice Guidelines: Process, Outcomes, and Implications."¹

On March 1, 1999, the ESRD CIP was merged with the ESRD CPM Project and is now known as the ESRD CPM Project. The ESRD CPMs overlap considerably with the core indicators, although a number of new measures were introduced, such as measures for assessing vascular access. In 2001, CMS expanded its ESRD CPM data collection efforts to include in-center pediatric hemodialysis patients, and, in 2005, pediatric peritoneal dialysis patients. During the summer of 2006, the collection of clinical data for the ESRD CPM Project was conducted on a five percent national random sample of medical records for adult hemodialysis and peritoneal dialysis patients (age ≥ 18 years) and on the universe of medical records for in-center pediatric hemodialysis and peritoneal dialysis patients (age < 18 years). The adult hemodialysis sample was stratified by ESRD Network.

For the reliability sample, a random sample was selected to yield a sufficient number of records to obtain stable estimates for each LDO and for the group of non-LDO facilities. These records were re-abstracted by Network staff. Facility

¹ Sugarman JR, Frederick PR, Frankenfield DL, Owen WF Jr., McClellan WM. Developing clinical performance measures based on the Dialysis Outcomes Quality Initiative Clinical Practice Guidelines: Process, outcomes, and implications. *Am J Kidney Dis*. 2003 Oct; 42(4):806-812.

data were either manually collected by facility staff (the non-LDOs) or electronically submitted (LDOs). The facility data and Network re-abstracted data were sent to Arbor Research to analyze and assess the extent to which there was concurrence between the two data files (inter-rater reliability).

Project Methods

Statistical Methods

The inter-rater reliability analysis was conducted using SAS for Windows version 9.1 to compute agreement rates, levels of concurrence, and kappa statistics.

Some continuous data (such as those shown in Tables 4 and 6) were re-coded as categorical data for the purpose of generating the kappa statistic. As a result, some facility-abstracted data and Network re-abstracted data may fall into the same category and thus achieve agreement, even though the values are not exactly the same. For example, Table 6 demonstrates a high level of concurrence for the data category of hemoglobin ≥ 9 gm/dL. As the category implies, specific hemoglobin values abstracted from the medical record are grouped together categorically with a cut-point of 9 mg/dL. Thus, a facility abstractor could have reported 11 gm/dL, while the Network re-abstractor could have reported 10 gm/dL, yet they achieve agreement because both values are placed in the same categorical field. (The designated cut-points for re-coding the categorical data were provided by CMS.)

Agreement Rates

Agreement rates were calculated for continuous data that were not missing in either data source. The agreement rate was obtained by dividing the number of exact matches between the facility abstracted and Network abstracted data by the total number of abstracted records. Although there is no criterion standard for acceptable levels of agreement, we considered an acceptable agreement rate to be $\geq 80\%$.

Levels of Concurrence

Levels of concurrence for categorical data are calculated in the same manner as the agreement rates are calculated for continuous data.

Levels of concurrence are calculated as the proportion of cases for which responses from the facility and the Network resulted in the same classification of the measurement (for instance, as being present, missing, or having met the set criteria). The method of calculation is shown in Table 1. We considered an acceptable target for concurrence to be $\geq 90\%$, although, as with agreement rates, there is no general standard for acceptable levels.

Two levels of concurrence (LOC) statistics are calculated; one for missing vs. non-missing values and one for all non-missing values. The first LOC calculation assesses whether or not both sources agree that the value is present (or missing). The second LOC considers only the non-missing values and assesses whether or not the reported values from both sources are the same.

Kappa Statistic

The kappa statistic is commonly used to assess concurrence of categorical ratings as determined by two raters. Although there is no “gold standard” for acceptable ranges for the kappa statistic, kappa values of 0.4 to 0.59 typically reflect moderate agreement; 0.6 to 0.79 substantial agreement; and 0.8 to 1.0 almost perfect agreement.²

As with concurrence, two kappa statistics are calculated; one for missing vs. non-missing values and one for non-missing values. The level of concurrence and kappa statistic were jointly used to analyze categorical data, because the kappa statistic alone can become unreliable

² Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1997;33:159-74.

when the incidence rate is low or when unbalanced marginal totals occur.³

Data Collection

Two data collection forms were used in the 2006 ESRD CPM Project. One form was used to abstract the records of adult and pediatric in-center hemodialysis patients; the other form was used to abstract the records of adult and pediatric peritoneal dialysis patients. Facility staff conducted the abstractions in the early summer of 2006, while Network staff conducted re-abstractions in the fall of 2006. Note that the LDOs submitted their data electronically. Network staff either received medical records from the facilities or went to the facilities to re-abstract the data. SAS data files were created by Arbor Research for analysis.

The patient identification number was used to pair the facility data with the Network data.

Hemodialysis Sample and Data Elements

A random 5% sample of adult in-center hemodialysis medical records and the universe of pediatric in-center hemodialysis medical records were abstracted from among all dialysis patients receiving care on December 31, 2005. Facility staff abstracted data from the medical records of these 8,915 adult and 803 pediatric patients during the fall of 2006, and Network staff re-abstracted 300 of the hemodialysis medical records.⁴

The inter-rater reliability statistics for the facility and Network data were calculated for the following in-center hemodialysis data elements:

Adequacy of Dialysis Data

- Recorded single-pool Kt/V
- Method used to calculate the recorded Kt/V
- Number of prescribed dialysis times per week
- Pre- and post-dialysis BUN

³ Feinstein AR, Cicchetti DV. High agreement but low kappa: I. The problems of two paradoxes. *J Clin Epidemiol.* 1990; 43:543-549.

⁴ The number of re-abstracted hemodialysis and peritoneal dialysis cases was minimized to decrease costs and impact on Network and facility staff.

- Pre- and post-dialysis weights

Anemia Management

- Pre-dialysis hemoglobin ≥ 9 gm/dL and ≥ 11 gm/dL
- Serum ferritin concentration ≥ 100 ng/mL
- Transferrin saturation $\geq 20\%$
- Epoetin prescription
- Mean hemoglobin
- Mean transferrin saturation
- Mean serum ferritin concentration

Mineral Metabolism

- Serum Calcium between 8.4 and 9.5 mg/dL
- Serum Calcium ≥ 9.5 mg/dL
- Serum Phosphorous ≤ 5.5 mg/dL

Serum Albumin

- Serum albumin values (≥ 3.5 gm/dL or ≥ 3.2 gm/dL based on laboratory method used)
- Laboratory method used to measure serum albumin
- Mean serum albumin by BCG method and by BCP method

Vascular Access

- The type of access used on the last hemodialysis session on or between 10/1/2005 and 12/31/2005
- Reason for catheter or port access, if used for access between 10/1/2005 and 12/31/2005
- Use of catheter or port access ≥ 90 days, if used for access between 10/1/2005 and 12/31/2005
- Presence of routine monitoring for stenosis and the method used for monitoring for stenosis, when AV grafts or AV fistulas were used for access
- The type of access used at the initiation of a maintenance course of hemodialysis and 90 days later, if between 1/1/2005 and 8/31/2005

Other Hemodialysis Data Elements

- Ethnicity

Peritoneal Dialysis Sample and Data Elements

Facility staff abstracted data from the medical records of 5% of randomly selected adult peritoneal dialysis patients (n = 1,469) and from the identified universe of pediatric peritoneal dialysis patients (n = 807) who received care from October 2005 through March 2006. Network staff re-abstracted 180 of the medical records originally abstracted by dialysis facility staff.

The inter-rater reliability statistics for the facility and Network data were calculated for the following adult peritoneal dialysis data elements:

Adequacy of Dialysis Data

- Weekly Kt/V_{urea} from dialysate and urine
- Method used to calculate the V in the recorded Kt/V_{urea}
- Weekly creatinine clearance
- Units of weekly creatinine clearance measurement (L/wk or L/wk/1.73m²)
- Is creatinine clearance corrected for body surface area?
- Clinic visit weight
- Adequacy assessment weight
- 24 hour dialysate volume
- 24 hour dialysate urea nitrogen
- 24 hour dialysate creatinine
- 24 hour urine volume
- 24 hour urine urea nitrogen
- 24 hour urine creatinine
- Serum BUN
- Serum creatinine

Anemia Management

- Hemoglobin ≥ 9 gm/dL and ≥ 11 gm/dL
- Serum ferritin concentration ≥ 100 ng/mL
- Transferrin saturation $\geq 20\%$
- Epoetin prescription
- Mean hemoglobin
- Mean transferrin saturation
- Mean serum ferritin concentration

Mineral Metabolism

- Serum Calcium between 8.4 and 9.5 mg/dL
- Serum Calcium ≥ 9.5 mg/dL
- Serum Phosphorous ≤ 5.5 mg/dL

Serum Albumin

- Serum albumin values (≥ 3.5 gm/dL or ≥ 3.2 gm/dL based on laboratory method used)
- Laboratory method used to measure serum albumin
- Mean serum albumin, mean among users of the BCG method, and mean among users of the BCP method

Dialysis Prescription

- Prescription changed after PD adequacy assessment

Other Adult Peritoneal Dialysis Data Elements

- Ethnicity

Results

Hemodialysis Data Elements

Matched data collection forms were available for 300 facility-abstracted and Network re-abstracted medical records.

Table 2 summarizes the comparison between facility and Network categorical data for selected hemodialysis indicators of care. Moderate to almost perfect agreement occurred for all data elements relating to adequacy of dialysis, anemia management, mineral metabolism, serum albumin, and vascular access.

Table 3 shows the agreement rates for continuous facility and Network data for selected adult hemodialysis data elements (excluding those related to access). All of the selected hemodialysis data elements showed acceptable agreement between the two data sets except for recorded Kt/V measures in December.

Tables 4 through 23 provide the inter-rater reliability analyses for each of the tested data elements, including those related to access. When the recorded Kt/V ≥ 1.2 was used as a

cutoff threshold for adequacy of dialysis, the kappa for missing vs. non-missing values ranged from 0.66 to 0.82 for October, November, and December. The kappa for non-missing values ranged from 0.92 to 0.98, indicating substantial agreement (Table 4). The data regarding the methods used to calculate the recorded Kt/V also indicated substantial agreement (the kappa for missing vs. non-missing values ranged from 0.66 to 0.82, the kappa for non-missing values ranged from 0.79 to 0.82) (Table 5). However, only moderate agreement was found between facility-abstracted data and Network re-abstracted data regarding whether or not Epoetin was prescribed (non-missing kappa range 0.64-0.71) (Table 10) and the lab method used to measure serum albumin (non-missing kappa range 0.56 – 0.61) (Table 14). The kappa statistic for non-missing values indicated nearly perfect agreement for all the other anemia management, mineral metabolism, and serum albumin data elements (Tables 6, 7, 8, 9, 11, 12 and 13).

Concurrence regarding the types of access used ranged from just below acceptable to acceptable (range was 89% to 95%) (Tables 15, 20, & 21). The kappa statistic for the type of access used on the last adult hemodialysis session (Table 15), type of access used at initiation (Table 20), and type of access used 90 days after initiation (Table 21) showed near perfect agreement between facility-abstracted data and Network re-abstracted data (non-missing kappa=0.92). The kappa statistic for catheter or port access (Table 16) reflects substantial agreement between abstractors, while the kappa statistic for chronic catheter use (Table 17) and presence of routine stenosis monitoring (Table 19) showed only moderate agreement.

The kappa statistic for ethnicity (Table 23) was near perfect at 0.98, and the level of concurrence was perfect (100%).

Table 24 provides agreement rates for facility data and Network data for selected hemodialysis data elements. The agreement rates for these data elements were all acceptable.

Peritoneal Dialysis Data Elements

Matched data collection forms were available for 180 facility-abstracted and Network re-abstracted medical records.

Table 25 summarizes the comparison between facility-abstracted and Network re-abstracted categorical data for selected peritoneal dialysis data elements. Almost perfect to perfect agreement occurred for data elements relating to adequacy of dialysis, anemia management, and serum albumin (kappas ranging from 0.84 to 1.00).

Table 26 compares means for continuous facility data and Network data for selected peritoneal dialysis data elements. There was almost no difference in the means of the facility and Network data for the hemoglobin, serum albumin, calcium, and phosphorous measures. Serum ferritin and transferrin saturation had slightly larger differences, and the dialysis adequacy measurements varied by a few tenths, except for the second measure of total weekly creatinine clearance which differed by close to 6 points. Clinic weight had the lowest agreement rate (24%) of all the continuous peritoneal dialysis data elements.

Tables 27 through 43 present the kappa statistics and the concurrence analysis for each of the tested data elements. The kappa statistics ranged from less than moderate to perfect agreement (ranging from 0.37 to 1.00). Concurrence between the facility-abstracted data and the Network re-abstracted data on the presence of a particular value in the facility record were acceptable (ranging from 80% to 100%), with the exception of whether the dialysis prescription was changed after the peritoneal dialysis adequacy measurements, which had levels of concurrence of 74% and 71%.

Table 44 shows agreement rates for facility-abstracted data compared to Network re-abstracted data for selected peritoneal dialysis data elements. The agreement rates for the recorded Kt/V_{urea}, 24 hour dialysate urea nitrogen, 24 hour dialysate creatinine, 24 hour urine volume, 24 hour urine creatinine, 24 hour

urine urea nitrogen, serum creatinine, and serum BUN were acceptable (ranging from 81% to 95%), whereas the agreement rates for adequacy assessment weight and recorded creatinine clearance were below acceptable. The LOC for clinic visit weight was very low at 23%.

Reliability From Year To Year

From 2005 to 2006, the inter-rater reliability for 11 data elements improved significantly over last year's results. An item's kappa statistic was considered to have improved significantly this year if it had a ≥ 0.1 increase from 2005 to 2006 and a shift upward in its categorical agreement rating. Table I-1 lists the data elements that improved from 2005 to 2006, as well as their associated kappa statistic and level of concurrence for the corresponding year.

The inter-rater reliability for a few hemodialysis and peritoneal dialysis data elements declined from last year's results. A data element's kappa statistic was considered to have declined significantly this year if it had a ≥ 0.1 decline from 2005 to 2006 and a downward shift in its categorical agreement rating. Table I-2 lists the four data elements that declined from 2005 to 2006, as well as their associated kappa statistic and level of concurrence for the corresponding years.

Conclusions

Overall, a high rate of agreement existed between data abstraction conducted by dialysis facility staff and re-abstraction of records by Network staff. Users can have confidence that the quality of the 2006 ESRD CPM data related to dialysis adequacy, anemia management, mineral metabolism, and serum albumin are not adversely influenced by the fact that the data are self-reported by dialysis facilities.

Several factors may account for the low inter-rater reliability found for some data elements. Such possibilities include lack of clear instructions, failure of abstractors to follow instructions, inaccurate completion of the data

collection forms, inaccurate data submitted electronically by corporate data repositories, statistical issues related to sample size, and unbalanced marginal totals (i.e., data elements related to rare events).

One limitation of this study is the relatively small number of cases that could be re-abstracted with available resources. It is also important to note that this study examined inter-rater reliability rather than validity. For instance, if a record entry listed the pre-dialysis weight of a patient to be 75 kg, both the facility abstractor and Network re-abstractor might have agreed on the pre-dialysis weight of the patient, yet the scale that was used to weigh the patient may have been inaccurate and in need of re-calibration. A more comprehensive validation study would require access to operative reports or other data sources that were not available for this study. However, there is no reason to believe that most routinely collected laboratory data are not accurately reflected in dialysis patient records.

Table I-1: Data Elements with Improved Inter-rater Reliability*

	Kappa		LOC	
	2005	2006	2005	2006
Hemodialysis Data Elements				
Hemoglobin \geq 9gm/dL (December)	0.87	1.00	99%	100%
Epoetin prescription (December)	0.59	0.71	93%	94%
Reason for catheter or port access, if used for access between 10/01/2005 - 12/31/2005	0.50	0.70	58%	75%
The routine stenosis monitoring method used between 10/01/2005 - 12/31/2005 when AV grafts or AV fistulae were used for access (Color-Flow Doppler Method)	-0.02	0.74	0%	100%
The type of access used 90 days after initiation of hemodialysis	0.75	0.92	85%	95%
# of prescribed hemodialysis times/week (October)	0.49	0.86	97%	99%
# of prescribed hemodialysis times/week (November)	0.54	0.95	98%	100%
# of prescribed hemodialysis times/week (December)	0.49	0.95	98%	100%
Peritoneal Dialysis Data Elements				
Ethnicity	0.86	1.00	97%	100%
Hemoglobin \geq 9 gm/dL (Feb/Mar)	0.87	1.00	98%	100%
Epoetin prescription (Feb/Mar)	0.73	0.86	93%	96%

Table I-2: Data Elements with Decreased Inter-rater Reliability*

	Kappa		LOC	
	2005	2006	2005	2006
Hemodialysis Data Elements				
Catheter or port access used exclusively as access \geq 90 days between 10/01/2005 - 12/31/2005	0.57	0.41	83%	80%
Peritoneal Dialysis Data Elements				
Total weekly Kt/V _{urea} (2 nd assessment)	1.00	0.86	100%	94%
Serum ferritin concentration (Oct/Nov)	1.00	0.85	100%	96%
Is Creatinine Clearance corrected for body surface area using standard methods? (1 st assessment)	0.66	0.37	97%	81%

*Kappa and LOC statistics are shown for non-missing values.

Some continuous values have been recorded as categorical, as indicated.

TABLE 1: Calculation of data concurrence and Kappa Statistics

Level of concurrence (LOC) is calculated 1) for missing vs. non-missing values and 2) among non-missing values.

Network Re-Abstracted Data

Facility Abstracted Data		Missing	Non - Missing	Total
	Missing	a	b	a+b
	Non-Missing	c	d	c+d
	Total	a+c	b+d	Total

$$\text{Level of concurrence missing vs. non-missing values} = \frac{a + d}{\text{Total}} \times 100$$

In the table above, concurrence is used to assess whether the two sources agree on whether or not the value is missing. All non-missing values are combined into a single group for each data source. Shaded cells represent concurrence, where both sources agree that the value is missing or present.

Network Re-Abstracted Data

Facility Abstracted Data		Missing	-	+	Total
	Missing	a	b	c	a + b + c
	-	d	e	f	d + e + f
	+	g	h	i	g + h + i
	Total	a + d + g	b + e + h	c + f + i	Total

$$\text{Level of concurrence for non-missing values} = \frac{e + i}{e + f + h + i} \times 100$$

In the table above, shaded cells a, e, and i represent concurrence—instances when both Network and facility staff reported the same value for a particular item. On the other hand, cells b, c, d, f, g, and h represent cases where there was not concurrence between the two sources of data on a value for a particular item.

Kappa is also calculated for missing vs. non-missing as well as among non-missing values. Kappa ranges from -1 to 1 where 1 is perfect agreement, 0 is exactly what would be expected by chance, and negative values indicate agreement less than chance.

Network Re-Abstracted Data

Facility Abstracted Data		Missing	Non - Missing	Total
	Missing	a	b	m1
	Non-Missing	c	d	m0
	Total	n1	n0	n

$$\begin{aligned} \text{Observed agreement} &= p_o = (a+d)/n \\ \text{Expected agreement} &= p_e = [(n1/n) * (m1/n)] + [(n0/n) * (m0/n)] \\ \text{Kappa} &= \frac{(p_o - p_e)}{(1 - p_e)} \end{aligned}$$

HEMODIALYSIS

TABLE 2: Comparison of categorical data abstracted by dialysis facility staff to categorical data re-abstracted by ESRD Network staff for selected hemodialysis data elements

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Kappa
ADEQUACY of DIALYSIS			
Weekly Kt/V			
Ktv ≥ 1.2 (October)	70%	70%	0.92
Ktv ≥ 1.2 (November)	77%	72%	0.93
Ktv ≥ 1.2 (December)	78%	76%	0.98
Prescribed Dialysis Times Per Week			
Prescribed dialysis < 3 times per week (October)	4%	3%	0.86
Prescribed dialysis < 3 times per week (November)	3%	3%	0.95
Prescribed dialysis < 3 times per week (December)	2%	2%	0.95
ANEMIA MANAGEMENT			
Hemoglobin			
Hemoglobin ≥ 9 gm/dL (October)	88%	88%	0.90
Hemoglobin ≥ 9 gm/dL (November)	91%	90%	1.00
Hemoglobin ≥ 9 gm/dL (December)	95%	94%	1.00
Hemoglobin ≥ 11 gm/dL (October)	75%	75%	0.99
Hemoglobin ≥ 11 gm/dL (November)	77%	77%	0.96
Hemoglobin ≥ 11 gm/dL (December)	80%	78%	0.94
Serum Ferritin Concentration			
Serum ferritin concentration ≥ 100 ng/mL (October)	56%	57%	0.95
Serum ferritin concentration ≥ 100 ng/mL (November)	51%	50%	0.96
Serum ferritin concentration ≥ 100 ng/mL (December)	52%	52%	1.00
Transferrin Saturation			
Transferrin saturation ≥ 20% (October)	54%	54%	1.00
Transferrin saturation ≥ 20% (November)	56%	56%	1.00
Transferrin saturation ≥ 20% (December)	55%	56%	1.00
SERUM ALBUMIN			
Serum albumin (≥ 3.5gm/dL [BCG] or ≥ 3.2gm/dL [BCP]) (October)	75%	75%	0.98
Serum albumin (≥ 3.5gm/dL [BCG] or ≥ 3.2gm/dL [BCP]) (November)	76%	75%	0.98
Serum albumin (≥ 3.5gm/dL [BCG] or ≥ 3.2gm/dL [BCP]) (December)	78%	79%	0.98

HEMODIALYSIS

TABLE 2: (Continued)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Kappa
VASCULAR ACCESS			
Type of Access			
AV Fistula	47%	43%	0.83
Graft with AVF	2%	2%	0.83
Graft without AVF	22%	24%	0.83
Catheter	28%	30%	0.83

BCG = bromcresol green

BCP = bromcresol purple

The number of matched facility and Network data collection forms was 300.

HEMODIALYSIS

TABLE 3: Comparison of means for continuous data abstracted by dialysis facility staff to continuous data re-abstracted by ESRD Network staff for selected hemodialysis data elements (excluding data elements related to vascular access)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Agreement Rate %
ADEQUACY OF DIALYSIS			
Recorded Kt/V (October)			
Mean	1.62 (n=233)	1.63 (n=230)	84
Minimum - Maximum	0.09-3.83	0.81-3.83	
Recorded Kt/V (November)			
Mean	1.61 (n=251)	1.60 (n=241)	88
Minimum - Maximum	0.70-3.48	0.70-3.48	
Recorded Kt/V (December)			
Mean	1.56 (n=263)	1.57 (n=255)	78
Minimum - Maximum	0.56-3.24	0.59-3.24	
Pre-Dialysis BUN (mg/dL) (October)			
Mean	54.19 (n=268)	54.26 (n=266)	97
Minimum - Maximum	10.00-145.00	10.00-145.00	
Pre-Dialysis BUN (mg/dL) (November)			
Mean	54.14 (n=279)	54.10 (n=275)	98
Minimum - Maximum	20.00-115.00	20.00-115.00	
Pre-Dialysis BUN (mg/dL) (December)			
Mean	56.35 (n=289)	56.27 (n=285)	98
Minimum - Maximum	20.00-143.00	20.00-143.00	
Post-Dialysis BUN (mg/dL) (October)			
Mean	14.83 (n=267)	14.80 (n=262)	97
Minimum - Maximum	3.00-58.00	3.00-58.00	
Post-Dialysis BUN (mg/dL) (November)			
Mean	14.71 (n=278)	14.77 (n=269)	97
Minimum - Maximum	2.00-38.00	2.00-38.00	
Post-Dialysis BUN (mg/dL) (December)			
Mean	15.85 (n=288)	15.84 (n=282)	99
Minimum - Maximum	1.00-58.00	1.00-58.00	
Pre-Dialysis weights (October)			
Mean	83.77 (n=259)	84.36 (n=254)	87
Minimum - Maximum	22.70-268.00	22.70-268.00	
Pre-Dialysis weights (November)			
Mean	82.96 (n=271)	83.62 (n=263)	82
Minimum - Maximum	23.50-271.00	23.50-271.00	
Pre-Dialysis weights (December)			
Mean	83.32 (n=278)	83.67 (n=269)	88
Minimum - Maximum	23.80-269.50	23.80-269.50	

HEMODIALYSIS

TABLE 3: (Continued)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Agreement Rate %
Post-Dialysis weights (October)			
Mean	80.78 (n=259)	81.34 (n=254)	85
Minimum - Maximum	21.80-260.00	21.80-260.20	
Post-Dialysis weights (November)			
Mean	79.92 (n=271)	80.62 (n=263)	84
Minimum - Maximum	22.50-262.00	22.50-262.00	
Post-Dialysis weights (December)			
Mean	80.05 (n=278)	80.57 (n=269)	86
Minimum - Maximum	22.50-260.60	22.30-260.60	
Scheduled Dialysis Times Per Week (October)			
Mean	2.95 (n=284)	2.96 (n=283)	99
Minimum - Maximum	0.00-4.00	0.00-4.00	
Scheduled Dialysis Times Per Week (November)			
Mean	2.96 (n=291)	2.96 (n=287)	100
Minimum - Maximum	0.00-4.00	0.00-4.00	
Scheduled Dialysis Times Per Week (December)			
Mean	2.99 (n=296)	2.98 (n=291)	99
Minimum - Maximum	2.00-4.00	0.00-4.00	
ANEMIA MANAGEMENT			
Hemoglobin (mg/dL) (October)			
Mean	12.07 (n=275)	12.09 (n=272)	84
Minimum - Maximum	6.40-16.50	6.40-16.60	
Hemoglobin (mg/dL) (November)			
Mean	12.11 (n=284)	12.13 (n=281)	90
Minimum - Maximum	6.90-16.30	6.90-16.30	
Hemoglobin (mg/dL) (December)			
Mean	12.12 (n=292)	12.13 (n=287)	86
Minimum - Maximum	8.10-16.40	8.10-16.70	
Serum Ferritin Concentration (ng/mL) (October)			
Mean	532.93 (n=182)	540.10 (n=182)	95
Minimum - Maximum	5.00-2364.00	5.00-2364.00	
Serum Ferritin Concentration (ng/mL) (November)			
Mean	562.45 (n=166)	560.98 (n=164)	97
Minimum - Maximum	6.00-1847.00	6.00-1846.00	
Serum Ferritin Concentration (ng/mL) (December)			
Mean	536.27 (n=173)	531.90 (n=173)	94
Minimum - Maximum	6.00-2819.00	6.00-2819.00	

HEMODIALYSIS

TABLE 3: (Continued)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Agreement Rate %
Transferrin Saturation (%) (October)			
Mean	25.63 (n=230)	25.22 (n=229)	97
Minimum - Maximum	3.00-84.00	3.00-84.00	
Transferrin Saturation (%) (November)			
Mean	28.48 (n=231)	27.97 (n=229)	100
Minimum - Maximum	5.00-96.00	5.00-96.00	
Transferrin Saturation (%) (December)			
Mean	26.76 (n=233)	27.02 (n=235)	98
Minimum - Maximum	6.00-89.00	6.00-89.00	
MINERAL METABOLISM			
CALCIUM			
Serum Calcium (October)			
Mean	9.12 (n=266)	9.08 (n=265)	92
Minimum - Maximum	6.40-11.40	6.40-11.40	
Serum Calcium (November)			
Mean	9.18 (n=280)	9.12 (n=279)	90
Minimum - Maximum	6.10-11.90	1.00-11.90	
Serum Calcium (December)			
Mean	9.10 (n=285)	9.08 (n=283)	91
Minimum - Maximum	6.70-11.90	6.70-12.40	
PHOSPHORUS			
Serum Phosphorus (October)			
Mean	5.56 (n=266)	5.58 (n=265)	97
Minimum - Maximum	1.80-13.00	1.80-13.00	
Serum Phosphorus (November)			
Mean	5.65 (n=280)	5.67 (n=279)	97
Minimum - Maximum	2.20-13.00	2.20-13.00	
Serum Phosphorus (December)			
Mean	5.59 (n=284)	5.58 (n=281)	97
Minimum - Maximum	1.70-11.40	1.70-11.40	
SERUM ALBUMIN			
Serum Albumin (October)			
Mean	3.82 (n=265)	3.82 (n=265)	97
Minimum - Maximum	2.40-5.00	2.40-5.00	
Serum Albumin (November)			
Mean	3.83 (n=279)	3.82 (n=279)	99
Minimum - Maximum	2.40-5.00	2.40-5.00	

HEMODIALYSIS

TABLE 3: (Continued)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Agreement Rate %
Serum Albumin (December)			
Mean	3.80 (n=284)	3.80 (n=285)	99
Minimum - Maximum	2.30-5.00	2.30-5.00	
Serum Albumin by BCG method (October)			
Mean	3.82 (n=258)	3.82 (n=252)	97
Minimum - Maximum	2.40-5.00	2.40-5.00	
Serum Albumin by BCG method (November)			
Mean	3.83 (n=272)	3.83 (n=268)	99
Minimum - Maximum	2.40-5.00	2.40-5.00	
Serum Albumin by BCG method (December)			
Mean	3.81 (n=276)	3.80 (n=273)	99
Minimum - Maximum	2.30-5.00	2.30-5.00	
Serum Albumin by BCP method (October)			
Mean	3.56 (n=7)	3.56 (n=7)	97
Minimum - Maximum	3.10-4.00	3.10-4.00	
Serum Albumin by BCP method (November)			
Mean	3.51 (n=7)	3.51 (n=7)	99
Minimum - Maximum	2.90-4.10	2.90-4.10	
Serum Albumin by BCP method (December)			
Mean	3.50 (n=8)	3.53 (n=7)	99
Minimum - Maximum	2.90-4.00	2.90-4.00	

BCG = bromcresol green

BCP = bromcresol purple

n = number of non-missing records in the sample; hence, the “n” may not be equal between the two samples

HEMODIALYSIS: Adequacy of Dialysis

TABLE 4: Recorded weekly single-pooled Kt/V [Question 17G]

October	Network Re-Abstracted Data			Total
	Missing	<1.2	≥1.2	
Facility Abstracted Data				
Missing	56	0	11	67
<1.2	4	18	0	22
≥1.2	10	3	198	211
Total	70	21	209	300

Kappa for Missing vs. Non-Missing Values = 0.76

Kappa for Non-Missing Values = 0.92

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 99%

November	Network Re-Abstracted Data			Total
	Missing	<1.2	≥1.2	
Facility Abstracted Data				
Missing	46	0	3	49
<1.2	0	21	0	21
≥1.2	13	3	214	230
Total	59	24	217	300

Kappa for Missing vs. Non-Missing Values = 0.82

Kappa for Non-Missing Values = 0.93

Level of Concurrence Missing vs. Non-Missing Values = 95%

Level of Concurrence for Non-Missing Values = 99%

December	Network Re-Abstracted Data			Total
	Missing	<1.2	≥1.2	
Facility Abstracted Data				
Missing	29	0	8	37
<1.2	2	26	1	29
≥1.2	14	0	220	234
Total	45	26	229	300

Kappa for Missing vs. Non-Missing Values = 0.66

Kappa for Non-Missing Values = 0.98

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 100%

HEMODIALYSIS: Adequacy of Dialysis

TABLE 5: Method used to calculate the recorded weekly single-pooled Kt/V [Question 17H]

October	Network Re-Abstracted Data						Total
	Missing	UKM	Daugirdas II	Equilibrated	Derived from URR	Other/Unknown	
Facility Abstracted Data							
Missing	56	5	4	0	0	2	67
UKM	7	66	3	1	1	5	83
Daugirdas II	5	4	42	0	1	4	56
Equilibrated	1	1	3	71	0	6	82
Derived from URR	1	0	0	0	4	1	6
Other/Unknown	0	2	0	0	0	4	6
Total	70	78	52	72	6	22	300

Kappa for Missing vs. Non-Missing Values = 0.76

Kappa for Non-Missing Values = 0.79

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 85%

November	Network Re-Abstracted Data						Total
	Missing	UKM	Daugirdas II	Equilibrated	Derived from URR	Other/Unknown	
Facility Abstracted Data							
Missing	46	2	0	0	0	1	49
UKM	4	75	4	0	1	4	88
Daugirdas II	5	4	51	0	1	5	66
Equilibrated	3	1	3	73	0	5	85
Derived from URR	0	0	0	0	5	1	6
Other/Unknown	1	2	0	0	0	3	6
Total	59	84	58	73	7	19	300

Kappa for Missing vs. Non-Missing Values = 0.82

Kappa for Non-Missing Values = 0.82

Level of Concurrence Missing vs. Non-Missing Values = 95%

Level of Concurrence for Non-Missing Values = 87%

HEMODIALYSIS: Adequacy of Dialysis

TABLE 5: (Continued)

December	Network Re-Abstracted Data						Total
	Missing	UKM	Daugirdas II	Equilibrated	Derived from URR	Other/Unknown	
Facility Abstracted Data							
Missing	29	3	3	0	0	2	37
UKM	8	74	4	0	1	5	92
Daugirdas II	7	4	50	0	1	4	66
Equilibrated	1	2	3	80	0	7	93
Derived from URR	0	0	0	0	5	1	6
Other/Unknown	0	2	0	0	0	4	6
Total	45	85	60	80	7	23	300

Kappa for Missing vs. Non-Missing Values = 0.66

Kappa for Non-Missing Values = 0.81

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 86%

HEMODIALYSIS: Anemia Management

TABLE 6: Hemoglobin ≥ 9 gm/dL [Question 15A]

October	Network Re-Abstracted Data			Total
	Missing	<9 gm/dL	≥ 9 gm/dL	
Facility Abstracted Data				
Missing	22	0	3	25
<9 gm/dL	0	9	2	11
≥ 9 gm/dL	6	0	258	264
Total	28	9	263	300

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.90

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 99%

November	Network Re-Abstracted Data			Total
	Missing	<9 gm/dL	≥ 9 gm/dL	
Facility Abstracted Data				
Missing	14	0	2	16
<9 gm/dL	0	11	0	11
≥ 9 gm/dL	5	0	268	273
Total	19	11	270	300

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values = 100%

December	Network Re-Abstracted Data			Total
	Missing	<9 gm/dL	≥ 9 gm/dL	
Facility Abstracted Data				
Missing	6	0	2	8
<9 gm/dL	1	5	0	6
≥ 9 gm/dL	6	0	280	286
Total	13	5	282	300

Kappa for Missing vs. Non-Missing Values = 0.56

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 100%

HEMODIALYSIS: Anemia Management

TABLE 7: Hemoglobin ≥ 11 gm/dL [Question 15A]

October	Network Re-Abstracted Data			Total
	Missing	<11 gm/dL	≥ 11 gm/dL	
Facility Abstracted Data				
Missing	22	0	3	25
<11 gm/dL	1	48	1	50
≥ 11 gm/dL	5	0	220	225
Total	28	48	224	300

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.99

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 100%

November	Network Re-Abstracted Data			Total
	Missing	<11 gm/dL	≥ 11 gm/dL	
Facility Abstracted Data				
Missing	14	0	2	16
<11 gm/dL	0	50	2	52
≥ 11 gm/dL	5	1	226	232
Total	19	51	230	300

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.96

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values = 99%

December	Network Re-Abstracted Data			Total
	Missing	<11 gm/dL	≥ 11 gm/dL	
Facility Abstracted Data				
Missing	6	1	1	8
<11 gm/dL	1	50	2	53
≥ 11 gm/dL	6	3	230	239
Total	13	54	233	300

Kappa for Missing vs. Non-Missing Values = 0.56

Kappa for Non-Missing Values = 0.94

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 98%

HEMODIALYSIS: Anemia Management

TABLE 8: Serum ferritin concentration ≥ 100 ng/dL [Question 15C]

October	Network Re-Abstracted Data			Total
	Missing	<100 ng/mL	≥ 100 ng/mL	
Facility Abstracted Data				
Missing	111	1	6	118
<100 ng/mL	2	10	1	13
≥ 100 ng/mL	5	0	164	169
Total	118	11	171	300

Kappa for Missing vs. Non-Missing Values = 0.90

Kappa for Non-Missing Values = 0.95

Level of Concurrence Missing vs. Non-Missing Values = 95%

Level of Concurrence for Non-Missing Values = 99%

November	Network Re-Abstracted Data			Total
	Missing	<100 ng/mL	≥ 100 ng/mL	
Facility Abstracted Data				
Missing	130	0	4	134
<100 ng/mL	0	14	0	14
≥ 100 ng/mL	6	1	145	152
Total	136	15	149	300

Kappa for Missing vs. Non-Missing Values = 0.93

Kappa for Non-Missing Values = 0.96

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 99%

December	Network Re-Abstracted Data			Total
	Missing	<100 ng/mL	≥ 100 ng/mL	
Facility Abstracted Data				
Missing	120	1	6	127
<100 ng/mL	0	17	0	17
≥ 100 ng/mL	7	0	149	156
Total	127	18	155	300

Kappa for Missing vs. Non-Missing Values = 0.90

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 95%

Level of Concurrence for Non-Missing Values = 100%

HEMODIALYSIS: Anemia Management

TABLE 9: Percent transferrin saturation $\geq 20\%$ [Question 15D]

October	Network Re-Abstracted Data			Total
	Missing	<20%	$\geq 20\%$	
Facility Abstracted Data				
Missing	61	2	7	70
<20%	3	64	0	67
$\geq 20\%$	7	0	156	163
Total	71	66	163	300

Kappa for Missing vs. Non-Missing Values = 0.82

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 94%

Level of Concurrence for Non-Missing Values = 100%

November	Network Re-Abstracted Data			Total
	Missing	<20%	$\geq 20\%$	
Facility Abstracted Data				
Missing	63	0	6	69
<20%	1	62	0	63
$\geq 20\%$	7	0	161	168
Total	71	62	167	300

Kappa for Missing vs. Non-Missing Values = 0.87

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 95%

Level of Concurrence for Non-Missing Values = 100%

December	Network Re-Abstracted Data			Total
	Missing	<20%	$\geq 20\%$	
Facility Abstracted Data				
Missing	59	2	6	67
<20%	3	64	0	67
$\geq 20\%$	3	0	163	166
Total	65	66	169	300

Kappa for Missing vs. Non-Missing Values = 0.86

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 95%

Level of Concurrence for Non-Missing Values = 100%

HEMODIALYSIS: Anemia Management

TABLE 10: Epoetin prescription [Question 15B1a]

October	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	22	3	0	0	25
Yes	5	225	5	1	236
No	0	10	20	0	30
Unknown	1	2	1	5	9
Total	28	240	26	6	300

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.70

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 93%

November	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	14	2	0	0	16
Yes	5	234	6	0	245
No	0	14	18	1	33
Unknown	0	1	0	5	6
Total	19	251	24	6	300

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.64

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values = 92%

December	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	6	1	1	0	8
Yes	6	243	5	0	254
No	1	10	20	1	32
Unknown	0	1	1	4	6
Total	13	255	27	5	300

Kappa for Missing vs. Non-Missing Values = 0.56

Kappa for Non-Missing Values = 0.71

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 94%

HEMODIALYSIS: Mineral Metabolism

TABLE 11: Serum Calcium values (<8.4, 8.4-9.5, >9.5 mg/dL) [Question 16A]

October- November	Network Re-Abstracted Data				Total
	Missing	<8.4 mg/dL	8.4 - 9.5 mg/dL	>9.5 mg/dL	
Facility Abstracted Data					
Missing	28	1	4	1	34
<8.4 mg/dL	1	30	1	0	32
8.4 - 9.5 mg/dL	3	3	158	2	166
>9.5 mg/dL	3	1	2	62	68
Total	35	35	165	65	300

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.93

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values= 97%

December- January	Network Re-Abstracted Data				Total
	Missing	<8.4 mg/dL	8.4 - 9.5 mg/dL	>9.5 mg/dL	
Facility Abstracted Data					
Missing	17	0	2	1	20
<8.4 mg/dL	0	44	0	0	44
8.4 - 9.5 mg/dL	2	4	136	2	144
>9.5 mg/dL	2	1	6	83	92
Total	21	49	144	86	300

Kappa for Missing vs. Non-Missing Values = 0.82

Kappa for Non-Missing Values = 0.92

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values= 95%

February - March	Network Re-Abstracted Data				Total
	Missing	<8.4 mg/dL	8.4 - 9.5 mg/dL	>9.5 mg/dL	
Facility Abstracted Data					
Missing	11	1	3	0	15
<8.4 mg/dL	1	44	0	0	45
8.4 - 9.5 mg/dL	4	2	155	1	162
>9.5 mg/dL	1	0	6	71	78
Total	17	47	164	72	300

Kappa for Missing vs. Non-Missing Values = 0.67

Kappa for Non-Missing Values = 0.94

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values= 97%

HEMODIALYSIS: Mineral Metabolism

TABLE 12: Serum Phosphorous values (≥ 5.5 mg/dL) [Question 16A]

October-November	Network Re-Abstracted Data			Total
	Missing	< 5.5 mg/dL	≥ 5.5 mg/dL	
Facility Abstracted Data				
Missing	28	4	2	34
< 5.5 mg/dL	2	133	1	136
≥ 5.5 mg/dL	5	0	125	130
Total	35	137	128	300

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.99

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values= 100%

December-January	Network Re-Abstracted Data			Total
	Missing	< 5.5 mg/dL	≥ 5.5 mg/dL	
Facility Abstracted Data				
Missing	17	2	1	20
< 5.5 mg/dL	1	144	0	145
≥ 5.5 mg/dL	3	1	131	135
Total	21	147	132	300

Kappa for Missing vs. Non-Missing Values = 0.82

Kappa for Non-Missing Values = 0.99

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values= 100%

February-March	Network Re-Abstracted Data			Total
	Missing	< 5.5 mg/dL	≥ 5.5 mg/dL	
Facility Abstracted Data				
Missing	12	2	2	16
< 5.5 mg/dL	5	139	2	146
≥ 5.5 mg/dL	2	2	134	138
Total	19	143	138	300

Kappa for Missing vs. Non-Missing Values = 0.67

Kappa for Non-Missing Values = 0.97

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values= 99%

HEMODIALYSIS: Serum Albumin

TABLE 13: Serum albumin values ($\geq 3.5/3.2$ gm/dL by BCG/BCP methods) [Questions 16C and 16D]

October	Network Re-Abstracted Data			Total
	Missing	<3.5/3.2 gm/dL	$\geq 3.5/3.2$ gm/dL	
Facility Abstracted Data				
Missing	29	0	6	35
<3.5/3.2 gm/dL	2	38	0	40
$\geq 3.5/3.2$ gm/dL	4	1	220	225
Total	35	39	226	300

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.98

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 100%

BCG = bromcresol green

BCP = bromcresol purple

November	Network Re-Abstracted Data			Total
	Missing	<3.5/3.2 gm/dL	$\geq 3.5/3.2$ gm/dL	
Facility Abstracted Data				
Missing	17	1	3	21
<3.5/3.2 gm/dL	0	50	0	50
$\geq 3.5/3.2$ gm/dL	4	2	223	229
Total	21	53	226	300

Kappa for Missing vs. Non-Missing Values = 0.80

Kappa for Non-Missing Values = 0.98

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 99%

BCG = bromcresol green

BCP = bromcresol purple

December	Network Re-Abstracted Data			Total
	Missing	<3.5/3.2 gm/dL	$\geq 3.5/3.2$ gm/dL	
Facility Abstracted Data				
Missing	11	0	5	16
<3.5/3.2 gm/dL	0	48	1	49
$\geq 3.5/3.2$ gm/dL	4	1	230	235
Total	15	49	236	300

Kappa for Missing vs. Non-Missing Values = 0.69

Kappa for Non-Missing Values = 0.98

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 99%

BCG = bromcresol green

BCP = bromcresol purple

HEMODIALYSIS: Serum Albumin

TABLE 14: Laboratory method used to measure serum albumin in Table 13 [Question 16D]

October	Network Re-Abstracted Data			Total
	Missing	BCP	BCG	
Facility Abstracted Data				
Missing	29	0	6	35
BCP	0	4	3	7
BCG	6	2	250	258
Total	35	6	259	300

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.61

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 98%

BCG = bromcresol green

BCP = bromcresol purple

November	Network Re-Abstracted Data			Total
	Missing	BCP	BCG	
Facility Abstracted Data				
Missing	17	0	4	21
BCP	0	4	3	7
BCG	4	2	266	272
Total	21	6	273	300

Kappa for Missing vs. Non-Missing Values = 0.80

Kappa for Non-Missing Values = 0.61

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 98%

BCG = bromcresol green

BCP = bromcresol purple

December	Network Re-Abstracted Data			Total
	Missing	BCP	BCG	
Facility Abstracted Data				
Missing	11	0	5	16
BCP	1	4	3	8
BCG	3	3	270	276
Total	15	7	278	300

Kappa for Missing vs. Non-Missing Values = 0.69

Kappa for Non-Missing Values = 0.56

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 98%

BCG = bromcresol green

BCP = bromcresol purple

HEMODIALYSIS: Vascular Access

TABLE 15: The type of access used on the last hemodialysis session on or between October 1, 2005 and December 31, 2005 [Question 18A]

	Network Re-Abstracted Data						Total
	Missing	AV Fistula	Graft with AVF	Graft without AVF	Catheter	Other	
Facility Abstracted Data							
Missing	4	0	0	0	0	0	4
AV Fistula	2	121	0	6	12	0	141
Graft with AVF	0	2	3	2	0	0	7
Graft without AVF	0	1	3	59	0	0	63
Catheter	1	2	0	3	76	0	82
Other	0	0	0	0	1	2	3
Total	7	126	6	70	89	2	300

Kappa for Missing vs. Non-Missing Values = 0.72

Kappa for Non-Missing Values = 0.83

Level of Concurrence Missing vs. Non-Missing Values = 99%

Level of Concurrence for Non-Missing Values = 89%

HEMODIALYSIS: Vascular Access

TABLE 16: Reason for catheter or port access, if used for access between October 1, 2005 and December 31, 2005 [Question 18C1]

	Network Re-Abstracted Data									Total
	Missing	Fistula maturing, not ready to cannulate	Graft maturing, not ready to cannulate	Temporary interruption of fistula due to clotting or revisions	Temporary interruption of graft due to clotting or revisions	All fistula or graft sites have been exhausted	No fistula or graft surgically created at this time	No fistula or graft surgically planned	Other	
Facility Abstracted Data										
Missing	205	4	0	1	1	1	3	1	2	218
Fistula maturing, not ready to cannulate	1	9	0	1	0	0	1	0	0	12
Graft maturing, not ready to cannulate	1	0	0	0	0	0	1	0	0	2
Temporary interruption of fistula due to clotting or revisions	2	0	1	3	0	0	0	0	1	7
Temporary interruption of graft due to clotting or revisions	0	0	0	0	1	0	0	0	0	1
All fistula or graft sites have been exhausted	0	0	0	0	0	14	3	0	1	18
No fistula or graft surgically created at this time	2	2	0	0	0	0	12	1	1	18
No fistula or graft surgically planned	0	0	0	0	1	0	1	10	0	12
Other	0	0	0	0	1	0	1	2	8	12
Total	211	15	1	5	4	15	22	14	13	300

Kappa for Missing vs. Non-Missing Values = 0.84

Kappa for Non-Missing Values = 0.70

Level of Concurrence Missing vs. Non-Missing Values = 94%

Level of Concurrence for Non-Missing Values = 75%

HEMODIALYSIS: Vascular Access

TABLE 17: Catheter or port access used exclusively as access ≥ 90 days between October 1, 2005 and December 31, 2005 [Question 18C2]

	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	205	10	1	2	218
Yes	3	54	8	0	65
No	3	2	6	0	11
Unknown	0	4	1	1	6
Total	211	70	16	3	300

Kappa for Missing vs. Non-Missing Values = 0.84

Kappa for Non-Missing Values = 0.41

Level of Concurrence Missing vs. Non-Missing Values = 94%

Level of Concurrence for Non-Missing Values = 80%

TABLE 18: The presence of routine monitoring for stenosis when AV grafts or AV fistulae were used for access between October 1, 2005 and December 31, 2005 [Question 18B1]

	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	84	1	2	2	89
Yes	5	92	7	12	116
No	8	22	33	12	75
Unknown	2	5	5	8	20
Total	99	120	47	34	300

Kappa for Missing vs. Non-Missing Values = 0.85

Kappa for Non-Missing Values = 0.43

Level of Concurrence Missing vs. Non-Missing Values = 93%

Level of Concurrence for Non-Missing Values = 68%

HEMODIALYSIS: Vascular Access

TABLE 19a-e: The routine stenosis monitoring method used between October 1, 2005 and December 31, 2005 when AV grafts or AV fistulae were used for access [Question 18B2]

19a: Color-Flow Doppler Method

	Network Re-Abstracted Data			Total
	Missing	No	Yes	
Facility Abstracted Data				
Missing	0	25	3	28
No	22	87	0	109
Yes	2	2	3	7
Total	24	114	6	144

Kappa for Missing vs. Non-Missing Values = -0.02

Kappa for Non-Missing Values = 0.74

Level of Concurrence Missing vs. Non-Missing Values = 63%

Level of Concurrence for Non-Missing Values = 100%

19b: Static Venous Pressure Method

	Network Re-Abstracted Data			Total
	Missing	No	Yes	
Facility Abstracted Data				
Missing	0	26	2	28
No	23	80	2	105
Yes	1	7	3	11
Total	24	113	7	144

Kappa for Missing vs. Non-Missing Values = -0.08

Kappa for Non-Missing Values = 0.35

Level of Concurrence Missing vs. Non-Missing Values = 58%

Level of Concurrence for Non-Missing Values = 100%

19c: Dynamic Venous Pressure Method

	Network Re-Abstracted Data			Total
	Missing	No	Yes	
Facility Abstracted Data				
Missing	0	15	13	28
No	11	33	9	53
Yes	13	7	43	63
Total	24	55	65	144

Kappa for Missing vs. Non-Missing Values = 0.25

Kappa for Non-Missing Values = 0.65

Level of Concurrence Missing vs. Non-Missing Values = 53%

Level of Concurrence for Non-Missing Values = 100%

Only patients for whom at least one source indicated a 'yes' value on a previous item are included in this table. Kappa and LOC statistics for missing vs. non-missing values are not appropriate in this case because some missing values are valid.

HEMODIALYSIS: Vascular Access

TABLE 19a-e: The routine stenosis monitoring method used between October 1, 2005 and December 31, 2005 when AV grafts or AV fistulae were used for access [Question 18B2]

19d: Dilution Technique

	Network Re-Abstracted Data			Total
	Missing	No	Yes	
Facility Abstracted Data				
Missing	0	28	0	28
No	23	79	1	103
Yes	1	5	7	13
Total	24	112	8	144

Kappa for Missing vs. Non-Missing Values = 0.01

Kappa for Non-Missing Values = 0.67

Level of Concurrence Missing vs. Non-Missing Values = 60%

Level of Concurrence for Non-Missing Values = 100%

Only patients for whom at least one source indicated a ‘yes’ value on a previous item are included in this table. Kappa and LOC statistics for missing vs. non-missing values are not appropriate in this case because some missing values are valid.

19e: Other Method

	Network Re-Abstracted Data			Total
	Missing	No	Yes	
Facility Abstracted Data				
Missing	0	18	10	28
No	19	70	10	99
Yes	5	3	9	17
Total	24	91	29	144

Kappa for Missing vs. Non-Missing Values = 0.11

Kappa for Non-Missing Values = 0.50

Level of Concurrence Missing vs. Non-Missing Values = 55%

Level of Concurrence for Non-Missing Values = 100%

Only patients for whom at least one source indicated a ‘yes’ value on a previous item are included in this table. Kappa and LOC statistics for missing vs. non-missing values are not appropriate in this case because some missing values are valid.

HEMODIALYSIS: Vascular Access

TABLE 20: The type of access used at the initiation of a maintenance course of hemodialysis, if between January 1, 2005 and August 31, 2005 [Question 19A]

	Network Re-Abstracted Data					Total
	Missing	AV Fistula	Graft with AVF	Graft without AVF	Port Access	
Facility Abstracted Data						
Missing	252	0	0	1	0	253
AV Fistula	2	7	0	2	0	11
Graft with AVF	1	1	2	1	0	5
Graft without AVF	2	0	0	26	0	28
Port Access	1	0	0	0	2	3
Total	258	8	2	30	2	300

Kappa for Missing vs. Non-Missing Values = 0.91

Kappa for Non-Missing Values = 0.81

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values = 90%

HEMODIALYSIS: Vascular Access

TABLE 21: The type of access used 90 days after the date in Table 20 during the initiation of hemodialysis, if between January 1, 2005 and August 31, 2005 [Question 19B]

	Network Re-Abstracted Data					Total
	Missing	AV Fistula	Graft	Catheter	Port Access	
Facility Abstracted Data						
Missing	252	0	0	1	0	253
AV Fistula	2	10	0	1	0	13
Graft with AVF	1	0	6	0	0	7
Graft without AVF	2	1	0	21	0	24
Port Access	1	0	0	0	2	3
Total	258	11	6	23	2	300

Kappa for Missing vs. Non-Missing Values = 0.91

Kappa for Non-Missing Values = 0.92

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values = 95%

HEMODIALYSIS: Other Data Elements

TABLE 22: Number of prescribed hemodialysis times per week [Question 17A]

October	Network Re-Abstracted Data				Total
	Missing	<3	= 3	> 3	
Facility Abstracted Data					
Missing	13	0	3	0	16
<3	0	8	3	0	11
=3	4	0	267	0	271
>3	0	0	0	2	2
Total	17	8	273	2	300

Kappa for Missing vs. Non-Missing Values = 0.78

Kappa for Non-Missing Values = 0.86

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values = 99%

November	Network Re-Abstracted Data				Total
	Missing	<3	= 3	> 3	
Facility Abstracted Data					
Missing	9	0	0	0	9
<3	0	8	1	0	9
=3	4	0	276	0	280
>3	0	0	0	2	2
Total	13	8	277	2	300

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.95

Level of Concurrence Missing vs. Non-Missing Values = 99%

Level of Concurrence for Non-Missing Values = 100%

December	Network Re-Abstracted Data				Total
	Missing	<3	= 3	> 3	
Facility Abstracted Data					
Missing	4	0	0	0	4
<3	0	6	1	0	7
=3	5	0	281	0	286
>3	0	0	0	3	3
Total	9	6	282	3	300

Kappa for Missing vs. Non-Missing Values = 0.61

Kappa for Non-Missing Values = 0.95

Level of Concurrence Missing vs. Non-Missing Values = 98%

Level of Concurrence for Non-Missing Values = 100%

HEMODIALYSIS: Other Data Elements

TABLE 23: Ethnicity [Question 13]

	Network Re-Abstracted Data			Total
	Missing	Non-Hispanic or Latino	Hispanic or Latino	
Missing	3	0	0	3
Non-Hispanic or Latino	1	261	0	262
Hispanic or Latino	0	1	34	35
Total	4	262	34	300

Kappa for Missing vs. Non-Missing Values = 0.86

Kappa for Non-Missing Values = 0.98

Level of Concurrence Missing vs. Non-Missing Values = 100%

Level of Concurrence for Non-Missing Values = 100%

HEMODIALYSIS**TABLE 24: Agreement rate of data abstracted by dialysis facility staff to data re-abstracted by ESRD Network staff for selected hemodialysis data elements**

Data Element	Agreement rate	Number of cases agreed upon	Total number of non-missing cases
Most recent date patient returned to adult hemodialysis [Question 11]	92%	12	13
Pre-dialysis BUN, October [Question 17B]	97%	255	263
Pre-dialysis BUN, November [Question 17B]	98%	269	274
Pre-dialysis BUN, December [Question 17B]	98%	279	284
Post-dialysis BUN, October [Question 17C]	97%	251	259
Post-dialysis BUN, November [Question 17C]	97%	262	269
Post-dialysis BUN, December [Question 17C]	99%	277	280
Pre-dialysis weight, October [Question 17D]	87%	215	248
Pre-dialysis weight, November [Question 17D]	82%	213	260
Pre-dialysis weight, December [Question 17D]	88%	231	264
Post-dialysis weight, October [Question 17D]	85%	212	248
Post-dialysis weight, November [Question 17D]	84%	218	260
Post-dialysis weight, December [Question 17D]	86%	226	264

PERITONEAL DIALYSIS

TABLE 25: Comparison of categorical data abstracted by dialysis facility staff to categorical data re-abstracted by ESRD Network staff for selected peritoneal dialysis data elements

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Kappa
ADEQUACY OF DIALYSIS			
Weekly Kt/V_{urea}			
Kt/V _{urea} ≥ 2.0 (1st PD Adequacy Measurement)	53	53	0.92
Kt/V _{urea} ≥ 2.0 (2nd PD Adequacy Measurement)	37	36	0.86
Weekly Creatinine Clearance (L/wk or L/wk/1.73m²)			
Creatinine clearance ≥ 60 (1st PD Adequacy Meas.)	44	43	0.93
Creatinine clearance ≥ 60 (2nd PD Adequacy Meas.)	32	29	0.87
Weekly Creatinine Clearance Adjusted for Body Surface Area (L/wk/1.73m²)			
Adjusted creatinine clearance ≥ 60 (1st PD Adequacy Meas.)	44	43	0.86
Adjusted creatinine clearance ≥ 60 (2nd PD Adequacy Meas.)	31	29	0.84
ANEMIA MANAGEMENT			
Hemoglobin			
Hemoglobin ≥ 9 gm/dL (October-November)	88	87	1.00
Hemoglobin ≥ 9 gm/dL (December-January)	94	93	0.89
Hemoglobin ≥ 9 gm/dL (February-March)	91	86	1.00
Hemoglobin ≥ 11 gm/dL (October-November)	71	71	0.95
Hemoglobin ≥ 11 gm/dL (December-January)	72	70	0.94
Hemoglobin ≥ 11 gm/dL (February-March)	72	68	1.00
Serum Ferritin Concentration			
Serum ferritin concentration ≥ 100 ng/mL (October-November)	60	58	0.85
Serum ferritin concentration ≥ 100 ng/mL (December-January)	65	62	0.93
Serum ferritin concentration ≥ 100 ng/mL (February-March)	41	35	0.96
Transferrin Saturation			
Transferrin saturation ≥ 20% (October-November)	66	62	0.90
Transferrin saturation ≥ 20% (December-January)	68	67	0.94
Transferrin saturation ≥ 20% (February-March)	59	53	0.95
MINERAL METABOLISM			
Serum Calcium			
Serum Calcium between 8.4 and 9.5 mg/dL (October-November)	42	44	0.93
Serum Calcium ≥ 9.5 mg/dL (October-November)	32	31	
Serum Calcium between 8.4 and 9.5 mg/dL (December-January)	44	43	0.97
Serum Calcium ≥ 9.5 mg/dL (December-January)	23	21	
Serum Calcium between 8.4 and 9.5 mg/dL (February-March)	44	44	0.93
Serum Calcium ≥ 9.5 mg/dL (February-March)	29	26	

PERITONEAL DIALYSIS

TABLE 25: (Cont.)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Kappa
Serum Phosphorous			
Serum Phosphorous \geq 5.5 mg/dL (October-November)	34	33	0.93
Serum Phosphorous \geq 5.5 mg/dL (December-January)	39	39	0.94
Serum Phosphorous \geq 5.5 mg/dL (February-March)	38	35	0.97
SERUM ALBUMIN			
Serum albumin (October-November) (\geq 3.2 gm/dL BCP/ \geq 3.5 gm/dL BCG)	57	56	0.93
Serum albumin (December-January) (\geq 3.2 gm/dL BCP/ \geq 3.5 gm/dL BCG)	59	59	0.99
Serum albumin (February-March) (\geq 3.2 gm/dL BCP/ \geq 3.5 gm/dL BCG)	58	54	0.97

BCG = bromcresol green

BCP = bromcresol purple

The number of matched facility and Network data collection forms was 180.

PERITONEAL DIALYSIS

TABLE 26: Comparison of means for continuous data abstracted by dialysis facility staff to continuous data re-abstracted by ESRD Network staff for selected peritoneal dialysis data elements

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Agreement Rate %
ADEQUACY OF DIALYSIS			
Total weekly Kt/V_{urea} (1st PD Adequacy Measurement)			
Mean	2.63 (n = 145)	2.35 (n = 144)	88
Minimum - Maximum	1.1 - 40.0	1.1 - 5.2	
Total weekly Kt/V_{urea} (2nd PD Adequacy Measurement)			
Mean	2.84 (n = 91)	2.47 (n = 92)	85
Minimum - Maximum	0.9 - 34.0	0.9 - 5.4	
Reported weekly Creatinine Clearance (L/wk or L/wk/1.73m²) [§] (1st PD Adequacy Measurement)			
Mean	77.75 (n = 147)	78.44 (n = 141)	74
Minimum - Maximum	1.7 - 320.0	1.7 - 318.0	
Reported weekly Creatinine Clearance (L/wk or L/wk/1.73m²) (2nd PD Adequacy Measurement)			
Mean	90.33 (n = 88)	83.36 (n = 89)	71
Minimum - Maximum	1.7 - 320.0	1.7 - 320.0	

PERITONEAL DIALYSIS

TABLE 26: (Cont.)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Agreement Rate %
ADEQUACY OF DIALYSIS (Cont.)			
Adjusted weekly Creatinine Clearance (L/wk/1.73m²)			
(1st PD Adequacy Measurement)			
Mean	78.05 (n = 145)	79.72 (n = 136)	65
Minimum - Maximum	1.7 - 320.0	16.6 - 318.0	
Adjusted weekly Creatinine Clearance (L/wk/1.73m²)			
(2nd PD Adequacy Measurement)			
Mean	89.32 (n = 88)	84.57 (n = 86)	64
Minimum - Maximum	1.4 - 320.0	1.4 - 320.0	
ANEMIA MANAGEMENT			
Hemoglobin (gm/dL) (October-November)			
Mean	11.91 (n = 168)	11.98 (n = 165)	92
Minimum - Maximum	6.4 - 16.7	6.4 - 16.7	
Hemoglobin (gm/dL) (December-January)			
Mean	12.15 (n = 173)	12.08 (n = 172)	91
Minimum - Maximum	6.0 - 17.9	6.2 - 17.9	
Hemoglobin (gm/dL) (February-March)			
Mean	12.06 (n = 165)	12.02 (n = 157)	92
Minimum - Maximum	5.4 - 16.3	5.4 - 16.3	
Serum Ferritin Concentration (ng/mL)			
(October-November)			
Mean	371.51 (n = 133)	432.47 (n = 124)	84
Minimum - Maximum	10.0 - 2168.0	12.0 - 3254.0	
Serum Ferritin Concentration (ng/mL)			
(December-January)			
Mean	451.67 (n = 138)	462.77 (n = 130)	94
Minimum - Maximum	18.0 - 2036.0	19.0 - 2036.0	
Serum Ferritin Concentration (ng/mL)			
(February-March)			
Mean	439.58 (n = 93)	427.39 (n = 79)	88
Minimum - Maximum	32.0 - 2535.0	44.0 - 2535.0	
Transferrin Saturation (Percent) (October-November)			
Mean	30.88 (n = 152)	32.68 (n = 145)	92
Minimum - Maximum	4.0 - 94.0	4.0 - 111.0	

PERITONEAL DIALYSIS

TABLE 26: (Cont.)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Agreement Rate %
ANEMIA MANAGEMENT (Cont.)			
Transferrin Saturation (Percent) (December-January)			
Mean	32.00 (n = 151)	31.20 (n = 150)	87
Minimum - Maximum	9.0 - 97.0	9.0 - 97.0	
Transferrin Saturation (Percent) (February-March)			
Mean	29.46 (n = 131)	29.06 (n = 123)	96
Minimum - Maximum	4.0 - 79.0	2.0 - 79.0	
WEIGHTS (kgs)			
Clinic Weight			
Mean	71.70 (n = 177)	72.36 (n = 173)	24
Minimum - Maximum	6.5 - 183.0	6.5 - 213.0	
Adequacy Weight (1st PD Adequacy Measurement)			
Mean	73.97 (n = 153)	74.38 (n = 149)	72
Minimum - Maximum	3.9 - 198.0	6.9 - 236.0	
Adequacy Weight (2nd PD Adequacy Measurement)			
Mean	82.51 (n = 95)	80.94 (n = 93)	67
Minimum - Maximum	10.7 - 198.0	8.1 - 222.0	
Serum Calcium (mg/dL) (October-November)			
Mean	9.24 (n = 163)	9.23 (n = 162)	84
Minimum - Maximum	2.4 - 12.5	2.4 - 12.5	
Serum Calcium (mg/dL) (December-January)			
Mean	9.11 (n = 173)	9.03 (n = 172)	85
Minimum - Maximum	2.1 - 15.4	2.1 - 15.4	
Serum Calcium (mg/dL) (February-March)			
Mean	9.09 (n = 163)	9.04 (n = 157)	87
Minimum - Maximum	1.7 - 11.3	1.7 - 11.3	
Serum Phosphorous (mg/dL) (October-November)			
Mean	5.26 (n = 164)	5.25 (n = 163)	89
Minimum - Maximum	1.5 - 12.6	1.5 - 12.6	
Serum Phosphorous (mg/dL) (December-January)			
Mean	5.29 (n = 173)	5.29 (n = 172)	91
Minimum - Maximum	1.9 - 11.9	1.9 - 11.9	
Serum Phosphorous (mg/dL) (February-March)			
Mean	5.31 (n = 163)	5.27 (n = 155)	93
Minimum - Maximum	1.4 - 12.0	1.4 - 11.1	

PERITONEAL DIALYSIS

TABLE 26: (Cont.)

Clinical Indicators	Data Abstracted by Facility Staff	Data Re-Abstracted by ESRD Network Staff	Agreement Rate %
SERUM ALBUMIN (gm/dL)			
Serum Albumin (October-November)			
Mean	3.54 (n = 165)	3.55 (n = 163)	93
Minimum - Maximum	1.6 - 4.9	1.6 - 4.9	
Serum Albumin (December-January)			
Mean	3.55 (n = 173)	3.57 (n = 171)	91
Minimum - Maximum	1.4 - 4.9	1.4 - 4.9	
Serum Albumin (February-March)			
Mean	3.55 (n = 163)	3.53 (n = 160)	93
Minimum - Maximum	1.5 - 5.1	1.5 - 5.1	
Serum Albumin by BCG Method (October-November)			
Mean	3.56 (n = 157)	3.56 (n = 159)	93
Minimum - Maximum	1.6 - 4.9	1.6 - 4.9	
Serum Albumin by BCG Method (December-January)			
Mean	3.57 (n = 163)	3.57 (n = 166)	91
Minimum - Maximum	1.4 - 4.7	1.4 - 4.7	
Serum Albumin by BCG Method (February-March)			
Mean	3.55 (n = 153)	3.53 (n = 155)	93
Minimum - Maximum	1.5 - 5.1	1.5 - 5.1	
Serum Albumin by BCP Method (October-November)			
Mean	3.20 (n = 4)	3.20 (n = 4)	93
Minimum - Maximum	2.7 - 3.6	2.7 - 3.6	
Serum Albumin by BCP Method (December-January)			
Mean	3.66 (n = 5)	3.66 (n = 5)	91
Minimum - Maximum	3.0 - 4.9	3.0 - 4.9	
Serum Albumin by BCP Method (February-March)			
Mean	3.40 (n = 5)	3.40 (n = 5)	93
Minimum - Maximum	3.0 - 4.4	3.0 - 4.4	

§ In 2006, there was a choice of units L/wk (not adjusted for body surface area) or L/wk/1.73m² (adjusted for body surface area). "Reported" is the mean regardless of units; "adjusted" uses height and weight to convert those reported as L/wk into L/wk/1.73m². BCG = bromcresol green BCP = bromcresol purple.
n = number of non-missing records in the sample; hence, the "n" may not be equal between the two samples

PERITONEAL DIALYSIS: Adequacy of Dialysis

TABLE 27: Total weekly Kt/V_{urea} [Question 17D & 19D]

1st PD Adequacy Measurement	Network Re-Abstracted Data			Total
	Missing	<2.0	≥2.0	
Facility Abstracted Data				
Missing	28	3	4	35
<2.0	2	44	3	49
≥2.0	6	2	88	96
Total	36	49	95	180

Kappa for Missing vs. Non-Missing Values = 0.74

Kappa for Non-Missing Values = 0.92

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 96%

2nd PD Adequacy Measurement	Network Re-Abstracted Data			Total
	Missing	<2.0	≥2.0	
Facility Abstracted Data				
Missing	82	2	5	89
<2.0	1	22	1	24
≥2.0	5	4	58	67
Total	88	28	64	180

Kappa for Missing vs. Non-Missing Values = 0.86

Kappa for Non-Missing Values = 0.86

Level of Concurrence Missing vs. Non-Missing Values = 93%

Level of Concurrence for Non-Missing Values = 94%

PERITONEAL DIALYSIS: Adequacy of Dialysis

TABLE 28: Method by which V was calculated in the total weekly Kt/V_{urea} [Question 17E & 19E]

1st PD Adequacy Measurement	Network Re-Abstracted Data					Total
	Missing	% Body Weight	Hume	Watson	Other	
Facility Abstracted Data						
Missing	28	2	3	1	1	35
% Body Weight	1	14	0	0	1	16
Hume	2	0	40	1	2	45
Watson	5	1	0	51	4	61
Other	0	1	1	1	20	23
Total	36	18	44	54	28	180

Kappa for Missing vs. Non-Missing Values = 0.74

Kappa for Non-Missing Values = 0.88

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 91%

2nd PD Adequacy Measurement	Network Re-Abstracted Data					Total
	Missing	% Body Weight	Hume	Watson	Other	
Facility Abstracted Data						
Missing	82	2	1	2	2	89
% Body Weight	1	8	0	0	1	10
Hume	1	0	31	1	0	33
Watson	4	1	0	26	3	34
Other	0	1	1	0	12	14
Total	88	12	33	29	18	180

Kappa for Missing vs. Non-Missing Values = 0.86

Kappa for Non-Missing Values = 0.87

Level of Concurrence Missing vs. Non-Missing Values = 93%

Level of Concurrence for Non-Missing Values = 91%

PERITONEAL DIALYSIS: Adequacy of Dialysis

TABLE 29: Reported weekly Creatinine Clearance [Question 17G & 19G]

1st PD Adequacy Measurement	Network Re-Abstracted Data			Total
	Missing	<60 L/wk	≥60 L/wk	
Facility Abstracted Data				
Missing	29	1	3	33
<60 L/wk or L/wk/1.73m ²	6	59	2	67
≥60 L/wk or L/wk/1.73m ²	4	3	73	80
Total	39	63	78	180

Kappa for Missing vs. Non-Missing Values = 0.76

Kappa for Non-Missing Values = 0.93

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 96%

2nd PD Adequacy Measurement	Network Re-Abstracted Data			Total
	Missing	<60 L/wk	≥60 L/wk	
Facility Abstracted Data				
Missing	83	6	3	92
<60 L/wk or L/wk/1.73m ²	2	27	2	31
≥60 L/wk or L/wk/1.73m ²	6	3	48	57
Total	91	36	53	180

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.87

Level of Concurrence Missing vs. Non-Missing Values = 91%

Level of Concurrence for Non-Missing Values = 94%

PERITONEAL DIALYSIS: Adequacy of Dialysis

TABLE 30: Weekly Creatinine Clearance Adjusted for Body Surface Area [Question 17G & 19G]

1st PD Adequacy Measurement	Network Re-Abstracted Data			Total
	Missing	<60 L/wk /1.73m ²	≥60 L/wk /1.73m ²	
Facility Abstracted Data				
Missing	30	1	4	35
<60 L/wk/1.73m ²	8	53	4	65
≥60 L/wk/1.73m ²	6	5	69	80
Total	44	59	77	180

Kappa for Missing vs. Non-Missing Values = 0.76

Kappa for Non-Missing Values = 0.86

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 93%

2nd PD Adequacy Measurement	Network Re-Abstracted Data			Total
	Missing	<60 L/wk /1.73m ²	≥60 L/wk /1.73m ²	
Facility Abstracted Data				
Missing	84	4	4	92
<60 L/wk/1.73m ²	3	26	3	32
≥60 L/wk/1.73m ²	7	3	46	56
Total	94	33	53	180

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.84

Level of Concurrence Missing vs. Non-Missing Values = 91%

Level of Concurrence for Non-Missing Values = 92%

PERITONEAL DIALYSIS: Adequacy of Dialysis

TABLE 31: Units for Creatinine Clearance Measure [Question 17G & 19G]

1st PD Adequacy Measurement	Network Re-Abstracted Data			Total
	Missing	L/wk/1.73m ²	L/wk	
Facility Abstracted Data				
Missing	28	4	1	33
L/wk/1.73m ²	10	116	6	132
L/wk	1	8	6	15
Total	39	128	13	180

Kappa for Missing vs. Non-Missing Values = 0.72

Kappa for Non-Missing Values = 0.41

Level of Concurrence Missing vs. Non-Missing Values = 91%

Level of Concurrence for Non-Missing Values = 90%

2nd PD Adequacy Measurement	Network Re-Abstracted Data			Total
	Missing	L/wk/1.73m ²	L/wk	
Facility Abstracted Data				
Missing	80	4	2	86
L/wk/1.73m ²	9	72	5	86
L/wk	1	2	5	8
Total	90	78	12	180

Kappa for Missing vs. Non-Missing Values = 0.82

Kappa for Non-Missing Values = 0.54

Level of Concurrence Missing vs. Non-Missing Values = 91%

Level of Concurrence for Non-Missing Values = 92%

PERITONEAL DIALYSIS: Adequacy of Dialysis

TABLE 32: Is Creatinine Clearance corrected for body surface area, using standard methods? [Question 17F & 19F]

1st PD Adequacy Measurement	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	21	2	1	2	26
Yes	4	106	4	12	126
No	1	3	1	0	5
Unknown	3	9	0	11	23
Total	29	120	6	25	180

Kappa for Missing vs. Non-Missing Values = 0.72

Kappa for Non-Missing Values = 0.37

Level of Concurrence Missing vs. Non-Missing Values = 93%

Level of Concurrence for Non-Missing Values = 81%

2nd PD Adequacy Measurement	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	70	4	1	6	81
Yes	6	66	4	7	83
No	0	1	1	0	2
Unknown	5	2	0	7	14
Total	81	73	6	20	180

Kappa for Missing vs. Non-Missing Values = 0.75

Kappa for Non-Missing Values = 0.46

Level of Concurrence Missing vs. Non-Missing Values = 88%

Level of Concurrence for Non-Missing Values = 84%

PERITONEAL DIALYSIS: Anemia Management
TABLE 33: Hemoglobin ≥ 9 gm/dL [Question 15A]

October-November	Network Re-Abstracted Data			Total
	Missing	<9 gm/dL	≥ 9 gm/dL	
Facility Abstracted Data				
Missing	11	0	1	12
<9 gm/dL	2	8	0	10
≥ 9 gm/dL	2	0	156	158
Total	15	8	157	180

Kappa for Missing vs. Non-Missing Values = 0.80

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 100%

December-January	Network Re-Abstracted Data			Total
	Missing	<9 gm/dL	≥ 9 gm/dL	
Facility Abstracted Data				
Missing	4	0	3	7
<9 gm/dL	0	4	0	4
≥ 9 gm/dL	4	1	164	169
Total	8	5	167	180

Kappa for Missing vs. Non-Missing Values = 0.51

Kappa for Non-Missing Values = 0.89

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 99%

February-March	Network Re-Abstracted Data			Total
	Missing	<9 gm/dL	≥ 9 gm/dL	
Facility Abstracted Data				
Missing	15	0	0	15
<9 gm/dL	0	2	0	2
≥ 9 gm/dL	8	0	155	163
Total	23	2	155	180

Kappa for Missing vs. Non-Missing Values = 0.77

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 100%

PERITONEAL DIALYSIS: Anemia Management
TABLE 34: Hemoglobin ≥ 11 gm/dL [Question 15A]

October-November	Network Re-Abstracted Data			Total
	Missing	<11 gm/dL	≥ 11 gm/dL	
Facility Abstracted Data				
Missing	11	0	1	12
<11 gm/dL	2	37	2	41
≥ 11 gm/dL	2	1	124	127
Total	15	38	127	180

Kappa for Missing vs. Non-Missing Values = 0.80

Kappa for Non-Missing Values = 0.95

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 98%

December-January	Network Re-Abstracted Data			Total
	Missing	<11 gm/dL	≥ 11 gm/dL	
Facility Abstracted Data				
Missing	4	1	2	7
<11 gm/dL	1	42	1	44
≥ 11 gm/dL	3	3	123	129
Total	8	46	126	180

Kappa for Missing vs. Non-Missing Values = 0.51

Kappa for Non-Missing Values = 0.94

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 98%

February-March	Network Re-Abstracted Data			Total
	Missing	<11 gm/dL	≥ 11 gm/dL	
Facility Abstracted Data				
Missing	15	0	0	15
<11 gm/dL	1	34	0	35
≥ 11 gm/dL	7	0	123	130
Total	23	34	123	180

Kappa for Missing vs. Non-Missing Values = 0.77

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 100%

PERITONEAL DIALYSIS: Anemia Management

TABLE 35: Serum ferritin concentration [Question 15C]

October-November	Network Re-Abstracted Data			Total
	Missing	<100 ng/mL	≥100 ng/mL	
Facility Abstracted Data				
Missing	44	0	3	47
<100 ng/mL	3	18	4	25
≥100 ng/mL	9	1	98	108
Total	56	19	105	180

Kappa for Missing vs. Non-Missing Values = 0.80

Kappa for Non-Missing Values = 0.85

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 96%

December-January	Network Re-Abstracted Data			Total
	Missing	<100 ng/mL	≥100 ng/mL	
Facility Abstracted Data				
Missing	36	1	5	42
<100 ng/mL	6	15	0	21
≥100 ng/mL	8	2	107	117
Total	50	18	112	180

Kappa for Missing vs. Non-Missing Values = 0.71

Kappa for Non-Missing Values = 0.93

Level of Concurrence Missing vs. Non-Missing Values = 89%

Level of Concurrence for Non-Missing Values = 98%

February-March	Network Re-Abstracted Data			Total
	Missing	<100 ng/mL	≥100 ng/mL	
Facility Abstracted Data				
Missing	85	0	2	87
<100 ng/mL	4	15	0	19
≥100 ng/mL	12	1	61	74
Total	101	16	63	180

Kappa for Missing vs. Non-Missing Values = 0.80

Kappa for Non-Missing Values = 0.96

Level of Concurrence Missing vs. Non-Missing Values = 90%

Level of Concurrence for Non-Missing Values = 99%

PERITONEAL DIALYSIS: Anemia Management

TABLE 36: Percent transferrin saturation [Question 15D]

October-November	Network Re-Abstracted Data			Total
	Missing	<20%	≥20%	
Facility Abstracted Data				
Missing	26	1	1	28
<20%	1	30	3	34
≥20%	8	2	108	118
Total	35	33	112	180

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.90

Level of Concurrence Missing vs. Non-Missing Values = 94%

Level of Concurrence for Non-Missing Values = 97%

December-January	Network Re-Abstracted Data			Total
	Missing	<20%	≥20%	
Facility Abstracted Data				
Missing	23	0	6	29
<20%	0	28	1	29
≥20%	7	2	113	122
Total	30	30	120	180

Kappa for Missing vs. Non-Missing Values = 0.74

Kappa for Non-Missing Values = 0.94

Level of Concurrence Missing vs. Non-Missing Values = 93%

Level of Concurrence for Non-Missing Values = 98%

February-March	Network Re-Abstracted Data			Total
	Missing	<20%	≥20%	
Facility Abstracted Data				
Missing	46	1	2	49
<20%	0	25	0	25
≥20%	11	2	93	106
Total	57	28	95	180

Kappa for Missing vs. Non-Missing Values = 0.81

Kappa for Non-Missing Values = 0.95

Level of Concurrence Missing vs. Non-Missing Values = 92%

Level of Concurrence for Non-Missing Values = 98%

PERITONEAL DIALYSIS: Anemia Management

TABLE 37: Epoetin prescription [Question 15B1a]

October-November	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	11	2	0	0	13
Yes	2	117	4	1	124
No	2	9	28	0	39
Unknown	0	3	1	0	4
Total	15	131	33	1	180

Kappa for Missing vs. Non-Missing Values = 0.77

Kappa for Non-Missing Values = 0.69

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 89%

December-January	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	4	3	0	1	8
Yes	3	124	6	1	134
No	1	8	26	0	35
Unknown	0	2	1	0	3
Total	8	137	33	2	180

Kappa for Missing vs. Non-Missing Values = 0.48

Kappa for Non-Missing Values = 0.68

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 89%

February-March	Network Re-Abstracted Data			Total
	Missing	Yes	No	
Facility Abstracted Data				
Missing	15	1	0	16
Yes	4	127	3	134
No	3	2	23	28
Unknown	1	1	0	2
Total	23	131	26	180

Kappa for Missing vs. Non-Missing Values = 0.74

Kappa for Non-Missing Values = 0.86

Level of Concurrence Missing vs. Non-Missing Values = 95%

Level of Concurrence for Non-Missing Values = 96%

PERITONEAL DIALYSIS: Mineral metabolism

TABLE 38: Serum Calcium values (<8.4, 8.4-9.5, >9.5 mg/dL) [Question 16A]

October-November	Network Re-Abstracted Data				Total
	Missing	<8.4 mg/dL	8.4 - 9.5 mg/dL	>9.5 mg/dL	
Facility Abstracted Data					
Missing	14	1	1	1	17
<8.4 mg/dL	1	26	3	0	30
8.4 - 9.5 mg/dL	2	0	72	1	75
>9.5 mg/dL	1	0	3	54	58
Total	18	27	79	56	180

Kappa for Missing vs. Non-Missing Values = 0.78

Kappa for Non-Missing Values = 0.93

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 96%

December-January	Network Re-Abstracted Data				Total
	Missing	<8.4 mg/dL	8.4 - 9.5 mg/dL	>9.5 mg/dL	
Facility Abstracted Data					
Missing	18	1	1	1	21
<8.4 mg/dL	0	39	0	0	39
8.4 - 9.5 mg/dL	5	0	74	0	79
>9.5 mg/dL	1	1	2	37	41
Total	24	41	77	38	180

Kappa for Missing vs. Non-Missing Values = 0.51

Kappa for Non-Missing Values = 0.97

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 98%

February-March	Network Re-Abstracted Data				Total
	Missing	<8.4 mg/dL	8.4 - 9.5 mg/dL	>9.5 mg/dL	
Facility Abstracted Data					
Missing	16	0	1	0	17
<8.4 mg/dL	1	29	0	0	30
8.4 - 9.5 mg/dL	3	0	75	2	80
>9.5 mg/dL	3	1	4	45	53
Total	23	30	80	47	180

Kappa for Missing vs. Non-Missing Values = 0.78

Kappa for Non-Missing Values = 0.93

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 96%

PERITONEAL DIALYSIS: Mineral metabolism

TABLE 39: Serum Phosphorous values (≥ 5.5 mg/dL) [Question 16B]

October-November	Network Re-Abstracted Data			Total
	Missing	< 5.5 mg/dL	≥ 5.5 mg/dL	
Facility Abstracted Data				
Missing	13	1	2	16
< 5.5 mg/dL	2	99	2	103
≥ 5.5 mg/dL	2	3	56	61
Total	17	103	60	180

Kappa for Missing vs. Non-Missing Values = 0.77

Kappa for Non-Missing Values = 0.93

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 97%

December-January	Network Re-Abstracted Data			Total
	Missing	< 5.5 mg/dL	≥ 5.5 mg/dL	
Facility Abstracted Data				
Missing	4	2	1	7
< 5.5 mg/dL	3	97	2	102
≥ 5.5 mg/dL	1	3	67	71
Total	8	102	70	180

Kappa for Missing vs. Non-Missing Values = 0.51

Kappa for Non-Missing Values = 0.94

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 97%

February-March	Network Re-Abstracted Data			Total
	Missing	< 5.5 mg/dL	≥ 5.5 mg/dL	
Facility Abstracted Data				
Missing	16	1	0	17
< 5.5 mg/dL	5	89	0	94
≥ 5.5 mg/dL	4	2	63	69
Total	25	92	63	180

Kappa for Missing vs. Non-Missing Values = 0.73

Kappa for Non-Missing Values = 0.97

Level of Concurrence Missing vs. Non-Missing Values = 94%

Level of Concurrence for Non-Missing Values = 99%

PERITONEAL DIALYSIS: Serum Albumin

TABLE 40: Serum albumin values ($\geq 3.5/3.2$ gm/dL by BCG/BCP methods) [Questions 16C and 16D]

October-November	Network Re-Abstracted Data			Total
	Missing	<3.5/3.2 gm/dL	$\geq 3.5/3.2$ gm/dL	
Facility Abstracted Data				
Missing	13	1	1	15
<3.5/3.2 gm/dL	2	59	2	63
$\geq 3.5/3.2$ gm/dL	2	3	97	102
Total	17	63	100	180

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.93

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 97%

December-January	Network Re-Abstracted Data			Total
	Missing	<3.5/3.2 gm/dL	$\geq 3.5/3.2$ gm/dL	
Facility Abstracted Data				
Missing	4	0	3	7
<3.5/3.2 gm/dL	3	63	0	66
$\geq 3.5/3.2$ gm/dL	2	1	104	107
Total	9	64	107	180

Kappa for Missing vs. Non-Missing Values = 0.48

Kappa for Non-Missing Values = 0.99

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 99%

February-March	Network Re-Abstracted Data			Total
	Missing	<3.5/3.2 gm/dL	$\geq 3.5/3.2$ gm/dL	
Facility Abstracted Data				
Missing	15	1	1	17
<3.5/3.2 gm/dL	0	59	0	59
$\geq 3.5/3.2$ gm/dL	5	2	97	104
Total	20	62	98	180

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.97

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 99%

PERITONEAL DIALYSIS: Serum Albumin

TABLE 41: Laboratory method used to measure serum albumin in Table 40 [Question 16D]

October-November	Network Re-Abstracted Data			Total
	Missing	BCP	BCG	
Facility Abstracted Data				
Missing	13	0	2	15
BCP	0	4	1	5
BCG	4	0	156	160
Total	17	4	159	180

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.89

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 99%

December-January	Network Re-Abstracted Data			Total
	Missing	BCP	BCG	
Facility Abstracted Data				
Missing	4	0	3	7
BCP	0	5	2	7
BCG	5	0	161	166
Total	9	5	166	180

Kappa for Missing vs. Non-Missing Values = 0.48

Kappa for Non-Missing Values = 0.83

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 99%

February-March	Network Re-Abstracted Data			Total
	Missing	BCP	BCG	
Facility Abstracted Data				
Missing	15	0	2	17
BCP	0	5	1	6
BCG	5	0	152	157
Total	20	5	155	180

Kappa for Missing vs. Non-Missing Values = 0.79

Kappa for Non-Missing Values = 0.91

Level of Concurrence Missing vs. Non-Missing Values = 96%

Level of Concurrence for Non-Missing Values = 99%

BCG = bromcresol green

BCP = bromcresol purple

PERITONEAL DIALYSIS: Prescription

TABLE 42: Prescription changed [Question 18 & 20]

1st PD Adequacy Measurement	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	3	0	0	1	4
Yes	1	29	9	3	42
No	4	5	89	25	123
Unknown	0	0	2	9	11
Total	8	34	100	38	180

Kappa for Missing vs. Non-Missing Values = 0.48

Kappa for Non-Missing Values = 0.52

Level of Concurrence Missing vs. Non-Missing Values = 97%

Level of Concurrence for Non-Missing Values = 74%

2nd PD Adequacy Measurement	Network Re-Abstracted Data				Total
	Missing	Yes	No	Unknown	
Facility Abstracted Data					
Missing	7	0	5	3	15
Yes	1	7	5	1	14
No	1	6	86	19	112
Unknown	3	0	15	21	39
Total	12	13	111	44	180

Kappa for Missing vs. Non-Missing Values = 0.48

Kappa for Non-Missing Values = 0.40

Level of Concurrence Missing vs. Non-Missing Values = 93%

Level of Concurrence for Non-Missing Values = 71%

PERITONEAL DIALYSIS: Other Data Elements

TABLE 43: Ethnicity [Question 13]

	Network Re-Abstracted Data			Total
	Missing	Non-Hispanic	Hispanic	
Facility Abstracted Data				
Missing	2	0	0	2
Non-Hispanic	1	155	0	156
Hispanic	0	0	22	22
Total	3	155	22	180

Kappa for Missing vs. Non-Missing Values = 0.80

Kappa for Non-Missing Values = 1.00

Level of Concurrence Missing vs. Non-Missing Values = 99%

Level of Concurrence for Non-Missing Values = 100%

PERITONEAL DIALYSIS

Table 44: Agreement rate of data abstracted by dialysis facility staff to data re-abstracted by ESRD Network staff for selected peritoneal dialysis data elements

Data Element	Agreement rate	Number of cases agreed upon	Total number of non-missing cases
Patient's weight at first visit, [Question 14B]	23%	39	172
Adequacy assessment weight, 1 st [Question 19C]	75%	110	147
Adequacy assessment weight, 2 nd [Question 19C]	74%	64	87
Recorded Kt/V _{urea} , 1 st [Question 17D]	88%	120	137
Recorded Kt/V _{urea} , 2 nd [Question 19D]	85%	72	85
Recorded creatinine clearance, 1 st [Question 17G]	74%	102	137
Recorded creatinine clearance, 2 nd [Question 19G]	71%	57	80
24 hour dialysate volume, 1 st [Question 17H]	83%	117	141
24 hour dialysate volume, 2 nd [Question 19H]	84%	71	85
24 hour dialysate urea nitrogen, 1 st [Question 17I]	90%	123	136
24 hour dialysate urea nitrogen, 2 nd [Question 19I]	93%	74	80
24 hour dialysate creatinine, 1 st [Question 17J]	89%	120	135
24 hour dialysate creatinine, 2 nd [Question 19J]	91%	69	76
24 hour urine volume, 1 st [Question 17K]	95%	87	92
24 hour urine volume, 2 nd [Question 19K]	91%	51	56
24 hour urine urea nitrogen, 1 st [Question 17L]	89%	81	91
24 hour urine urea nitrogen, 2 nd [Question 19L]	81%	44	54
24 hour urine creatinine, 1 st [Question 17M]	85%	76	89
24 hour urine creatinine, 2 nd [Question 19M]	81%	44	54
Serum BUN, 1 st [Question 17N]	90%	127	141
Serum BUN, 2 nd [Question 19N]	91%	77	85
Serum creatinine, 1 st [Question 17O]	91%	128	140
Serum creatinine, 2 nd [Question 19O]	94%	74	79

2006 ESRD Clinical Performance Measures Reliability Report Part II – Supplemental LDO Report

Objective

This supplement to the 2006 ESRD CPM Reliability Report includes analysis of data from five Large Dialysis Organizations (LDOs) and several other Dialysis Organizations, to test the inter-rater reliability of original electronically submitted data. The ESRD Network re-abstracted data were used as the “gold standard” to which these data were compared to assess the accuracy of electronically submitted data.

Background

All participating non-LDO facilities submitted their data using the traditional manual ESRD CPM data collection forms. This year, the LDOs submitted their data electronically from their corporate data repositories, using QNet Exchange, to Computer Sciences Corporation (CSC), a contractor to CMS, and from there to the ESRD Network offices. These data are referred to as the “original data.”

Project Methods

The same statistical methods used to calculate levels of concurrence (LOC) for Part I were used for Part II of this report. In Table A and Table B the “LOC” is the level of concurrence between the Network re-abstracted data and the original data. The LOC is shown for original non-LDO facility data compared to Network data, as well as original LDO data compared to Network data. The “N” is the number of non-missing records from each LDO or non-LDO that were used to calculate the LOC for each data element.

The sample of patients for this report was designed to include equal numbers of patients from each LDO to the extent possible. Data were re-abstracted for 300 hemodialysis patients and 180 peritoneal dialysis patients. The result is 50 hemodialysis patients and 30 peritoneal dialysis patients from each LDO and from the combined non-LDOs.

Findings

Table A shows the LOC for hemodialysis data elements by LDO. The LDOs and non-LDOs submitted almost all of the data elements, and most of the data elements show substantial agreement with the Network data. The table also shows that some LDOs did not submit some data elements. One data element, On-Line Clearance (OLC) Based Access Flow, was not submitted by three of the LDOs or by any of the non-LDOs.

Table B shows the LOC for peritoneal dialysis data elements by LDO. Similar to Table A, it shows patterns of data submission by LDO and generally high agreement with Network data. Some missing data elements are clearly LDO-specific issues. For example, only three LDOs provided any information regarding most recent four hour dialysate/plasma creatinine ratio.

Note that these statistics are calculated only for non-missing values. In cases where most of the values for a given data element were missing, the LOC may appear very high, indicating substantial agreement, but is based on very few records.

Table A: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Hemodialysis Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
11	Most recent date returned to hemodialysis following transplant failure, renewed kidney function, or switched modality	4	100	1	100	3	100	2	50	1	100	2	100
13	Patient Ethnicity	49	100	48	100	50	100	50	98	50	100	49	100
14	Patient Height	48	67	45	58	50	58	50	72	49	71	49	61
14	Height Units	48	90	45	87	50	82	50	82	49	82	49	76
15A	Pre-dialysis monthly lab hgb (1=<9 2>=9), October	46	100	43	100	43	98	48	100	43	100	46	98
15A	Pre-dialysis monthly lab hgb (1=<9 2>=9), November	48	100	43	100	46	100	50	100	46	100	46	100
15A	Pre-dialysis monthly lab hgb (1=<9 2>=9), December	48	100	45	100	50	100	48	100	46	100	48	100
15A	Pre-dialysis monthly lab hgb (1=<11 2>=11), October	46	100	43	100	43	100	48	100	43	100	46	98
15A	Pre-dialysis monthly lab hgb (1=<11 2>=11), November	48	100	43	98	46	98	50	100	46	100	46	98
15A	Pre-dialysis monthly lab hgb (1=<11 2>=11), December	48	100	45	98	50	100	48	96	46	96	48	100
15B1a	Was there a prescription for EPO, October	46	100	43	91	43	100	48	90	43	91	46	87
15B1a	Was there a prescription for EPO, November	48	94	43	88	46	96	50	90	46	93	46	91
15B1a	Was there a prescription for EPO, December	48	98	45	87	50	94	48	96	46	98	48	90
15B1b	Was there a prescription for Darbo, October	46	93	43	98	43	93	48	96	43	95	46	100
15B1b	Was there a prescription for Darbo, November	48	96	43	98	46	89	50	94	46	100	46	100
15B1b	Was there a prescription for Darbo, December	48	98	45	100	50	92	48	94	46	93	48	98
15C	First serum ferritin concentration of the month, October	34	100	24	100	30	100	29	100	34	100	24	96
15C	First serum ferritin concentration of the month, November	28	100	18	94	23	100	29	100	27	100	35	100
15C	First serum ferritin concentration of the month, December	23	100	20	100	29	100	32	100	29	100	33	100

Table A: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Hemodialysis Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
15D	First % transferrin saturation during the month, October	38	100	32	100	30	100	39	100	39	100	42	100
15D	First % transferrin saturation during the month, November	39	100	39	100	25	100	41	100	38	100	41	100
15D	First % transferrin saturation during the month, December	36	100	38	100	28	100	40	100	40	100	45	100
15E	Was iron prescribed during the month, October	48	94	46	85	48	92	49	88	49	84	48	83
15E	Was iron prescribed during the month, November	48	92	46	85	48	92	50	90	49	84	49	84
15E	Was iron prescribed during the month, December	48	94	46	87	50	92	50	86	48	83	49	88
15F	Prescribed route of iron administration, October	23	96	22	100	30	97	27	100	30	100	20	100
15F	Prescribed route of iron administration, November	22	91	20	100	29	97	31	100	29	100	20	100
15F	Prescribed route of iron administration, December	21	95	24	100	30	97	25	100	24	100	22	100
16A	First serum calcium during the month, October	46	96	38	95	43	98	46	98	41	95	45	98
16A	First serum calcium during the month, November	48	98	42	83	45	98	49	100	45	91	47	100
16A	First serum calcium during the month, December	47	98	42	93	50	96	47	98	45	96	48	100
16B	First serum phosphorus during the month, October	46	100	38	100	43	100	46	100	41	100	45	98
16B	First serum phosphorus during the month, November	48	100	42	100	45	98	49	100	45	100	47	100
16B	First serum phosphorus during the month, December	46	96	41	100	50	100	47	98	45	100	48	98
16C	First serum albumin during the month, October	46	98	38	100	43	100	46	100	41	100	45	100
16C	First serum albumin during the month, November	48	96	41	100	45	100	49	100	45	100	47	100
16C	First serum albumin during the month, December	46	98	43	100	50	98	47	100	46	100	48	100
16D	Lab method used for albumin result, October	46	96	38	97	43	98	46	98	41	100	45	100
16D	Lab method used for albumin result, November	48	96	41	98	45	98	49	98	45	100	47	100
16D	Lab method used for albumin result, December	46	96	43	98	50	96	47	98	46	100	48	100
17A	Prescribed dialysis sessions per week, October	48	96	43	100	45	100	48	100	48	100	48	98
17A	Prescribed dialysis sessions per week, November	48	98	44	100	47	100	50	100	49	100	49	100

Table A: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Hemodialysis Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
17A	Prescribed dialysis sessions per week, December	48	98	46	100	50	100	50	100	48	100	49	100
17B	1st Pre-dialysis BUN of the month, October	46	93	39	95	42	100	45	100	46	96	45	98
17B	1st Pre-dialysis BUN of the month, November	47	94	44	100	45	100	47	100	45	98	46	98
17B	1st Pre-dialysis BUN of the month, December	47	94	46	100	49	98	48	100	47	98	47	100
17C	1st Post Dialysis BUN of the month, October	46	89	38	97	42	100	44	100	44	98	45	98
17C	1st Post Dialysis BUN of the month, November	47	89	43	98	45	100	46	98	43	100	45	100
17C	1st Post Dialysis BUN of the month, December	47	94	45	100	49	100	47	100	45	100	47	100
17D	Pre-dialysis weight at session when BUNs above drawn, October	43	77	37	78	40	93	44	91	40	93	44	89
17D	Pre-dialysis weight units, October	43	95	37	100	40	93	44	100	40	98	44	98
17D	Post-dialysis weight at session when BUNs above drawn, October	43	72	37	81	40	88	44	89	40	93	44	91
17D	Post-dialysis weight units, October	43	95	37	100	40	93	44	100	40	98	44	98
17D	Pre-dialysis weight at session when BUNs above drawn, November	45	73	42	81	45	84	45	84	39	87	44	82
17D	Pre-dialysis weight units, November	45	98	42	100	45	96	45	100	39	97	44	98
17D	Post-dialysis weight at session when BUNs above drawn, November	45	82	42	76	45	87	45	80	39	90	44	89
17D	Post-dialysis weight units, November	45	98	42	100	45	96	45	100	39	97	44	98
17D	Pre-dialysis weight at session when BUNs above drawn, December	44	84	42	76	48	88	45	89	41	93	44	95
17D	Pre-dialysis weight units, December	44	95	42	100	48	96	45	100	41	98	44	100
17D	Post-dialysis weight at session when BUNs above drawn, December	44	82	42	76	48	88	45	89	41	88	44	91
17D	Post-dialysis weight units, December	44	95	42	100	48	96	45	100	41	98	44	100
17E	Actual delivered Time on dialysis (minutes), October	22	59	21	71	27	78	28	93	29	97	33	52
17E	Actual delivered Time on dialysis (minutes), November	25	52	28	93	26	73	26	92	28	89	38	47

Table A: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Hemodialysis Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
17E	Actual delivered Time on dialysis (minutes), December	24	75	22	82	29	62	28	86	27	93	36	39
17F	1st recorded URR of the month, October	45	71	39	100	42	74	44	93	44	95	45	91
17F	1st recorded URR of the month, November	46	76	44	100	45	78	46	93	45	100	45	98
17F	1st recorded URR of the month, December	46	76	45	100	48	75	46	93	47	98	47	98
17G	1st recorded single-pool Kt/V of the month, October	34	100	37	100	41	95	36	97	33	100	38	100
17G	1st recorded single-pool Kt/V of the month, November	36	100	42	100	43	98	38	95	42	100	37	100
17G	1st recorded single-pool Kt/V of the month, December	36	100	42	100	47	100	40	100	40	98	42	100
17H	Method used to calculate Kt/V, October	34	85	37	86	41	76	36	81	33	85	38	100
17H	Method used to calculate Kt/V, November	36	83	42	90	43	79	38	84	42	86	37	100
17H	Method used to calculate Kt/V, December	36	83	42	90	47	77	40	80	40	88	42	100
17H	Description of other method used for Kt/V, October	4	100	0	0	0	0	0	0	0	0	0	0
17H	Description of other method used for Kt/V, November	3	100	0	0	0	0	0	0	0	0	0	0
17H	Description of other method used for Kt/V, December	4	100	0	0	0	0	0	0	0	0	0	0
18A	Type of access in use on the last hemodialysis session of study period	48	83	47	89	50	94	50	90	49	84	49	94
18B1	Was routine monitoring for stenosis performed	33	76	34	68	32	75	35	69	29	62	33	58
18B2	Method for monitoring stenosis: color flow doppler	16	94	17	94	13	100	21	100	13	100	12	100
18B2	Method for monitoring stenosis: static venous pressure	16	94	17	76	13	77	21	100	13	92	12	100
18B2	Method for monitoring stenosis: dynamic venous pressure	16	81	17	76	13	77	21	90	13	92	12	75
18B2	Method for monitoring stenosis: dilution technique	16	94	17	100	13	77	21	100	13	92	12	92
18B2	Method for monitoring stenosis: On-Line Clearance (OLC) Based Access Flow	0	0	0	0	1	100	17	100	0	0	0	0

Table A: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Hemodialysis Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
18B2	Method for monitoring stenosis: Other	4	100	1	100	0	0	0	0	1	100	3	100
18B2	Description of other method for monitoring stenosis	4	75	1	100	0	0	0	0	1	0	3	67
18C1	Reason for having catheter or port access	20	80	23	78	26	81	21	90	25	76	23	100
18C1_7	Reason for catheter: Physician Preference	1	100	0	0	1	100	1	100	1	100	0	0
18C1_7	Reason for catheter: Patient preference	20	90	23	100	26	96	21	90	25	100	23	100
18C1_7	Reason for catheter: PVD	20	100	23	100	26	96	21	90	25	96	23	91
18C1_7	Reason for catheter: Patient too small	20	100	23	100	26	100	21	100	25	100	23	100
18C1_7	Reason for catheter: Tx scheduled	20	100	23	100	26	100	21	100	25	100	23	100
18C1_8	Description of catheter reason: Other	1	100	0	0	2	100	2	100	1	100	2	100
18C2	Has catheter or port been used exclusively for past 90 days or longer	12	100	8	88	16	50	12	100	15	73	13	85
19	Patient started dialysis during January - August 2005	49	100	48	100	50	96	50	98	50	96	49	98
19A	Type of access in use at the initiation	6	100	7	86	5	80	6	83	7	86	10	100
19B	Type of access for this patient in use 90 days after initiation	6	100	7	86	5	100	6	100	7	100	10	90

Table B: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Peritoneal Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
11	Most recent date patient returned to peritoneal dialysis	1	100	2	50	4	100	2	100	2	100	4	75
13	Denotes ethnicity of the patient	29	100	30	100	28	100	30	100	30	100	30	100
14a	Patient height	28	39	28	68	26	69	30	73	30	80	30	60
14a	Patient height units	28	86	28	89	26	96	30	80	30	90	30	73
14b	Patient Weight at first clinic visit after Oct 1, 2005	28	18	28	36	26	19	30	20	30	23	30	20
14b	Unit of measure used for clinic weight	28	93	28	89	26	85	30	83	30	90	30	80
15A	First laboratory hemoglobin during the 2 month time period (OCT-NOV 2005)	27	89	26	88	23	100	28	100	30	90	30	87
15A	First laboratory hemoglobin during the 2 month time period (DEC 2005 - JAN 2006)	27	85	28	89	25	100	30	100	30	83	29	90
15A	First laboratory hemoglobin during the 2 month time period (FEB-MAR 2006)	28	82	25	92	22	100	28	96	29	93	25	92
15B1a	Did patient have a prescription for EPO at any time during the 28 days BEFORE the HGB in 15A was drawn? (OCT-NOV 2005)	26	88	26	88	23	91	28	82	30	97	30	87
15B1a	Did patient have a prescription for EPO at any time during the 28 days BEFORE the HGB in 15A was drawn? (DEC 2005-JAN 2006)	26	88	28	89	25	92	30	87	30	93	29	86
15B1a	Did patient have a prescription for EPO at any time during the 28 days BEFORE the HGB in 15A was drawn? (FEB-MAR 2006)	27	100	25	88	22	100	28	96	29	100	25	92
15B1b	Was there a prescription for Darbepoetin during the month immediately BEFORE the above HGB was drawn (OCT-NOV 2005)	26	92	26	92	23	100	28	89	30	83	30	93
15B1b	Was there a prescription for Darbepoetin during the month immediately BEFORE the above HGB was drawn (DEC 2005 - JAN 2006)	26	92	28	93	25	96	30	90	30	90	29	93
15B1b	Was there a prescription for Darbepoetin during the month immediately BEFORE the above HGB was drawn (FEB-MAR 2006)	27	96	25	92	22	91	28	93	29	90	25	100

Table B: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Peritoneal Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
15C	First serum ferritin concentration during the 2 month time period (OCT-NOV 2005)	16	94	18	94	18	100	25	100	25	88	19	100
15C	First serum ferritin concentration during the 2 month time period (DEC 2005- JAN 2006)	19	95	21	100	19	100	24	100	20	95	21	100
15C	First serum ferritin concentration during the 2 month time period (FEB-MAR 2006)	13	100	8	100	11	100	13	100	17	94	15	100
15D	First % transferrin (iron) saturation during the 2 month time period (OCT-NOV 2005)	19	95	24	100	20	90	28	96	26	100	26	96
15D	First % transferrin (iron) saturation during the 2 month time period (DEC 2005 - JAN 2006)	21	100	26	88	20	100	27	100	26	100	24	100
15D	First % transferrin (iron) saturation during the 2 month time period (FEB-MAR 2006)	19	95	22	100	11	100	25	100	23	96	20	100
15E	Was iron prescribed at any time during the two month time period (OCT-NOV 2005)	28	86	28	82	26	96	29	83	30	77	30	93
15E	Was iron prescribed at any time during the two month time period (DEC 2005 - JAN 2006)	28	93	28	79	26	88	30	73	30	93	30	77
15E	Was iron prescribed at any time during the two month time period (FEB-MAR 2006)	28	93	28	82	26	77	30	63	29	90	30	97
15F	Prescribed route of iron administration (OCT-NOV 2005)	18	94	14	93	18	83	14	86	12	83	13	92
15F	Prescribed route of iron administration (DEC 2005 - JAN 2006)	21	95	14	93	19	89	12	92	11	91	13	92
15F	Prescribed route of iron administration (FEB-MAR 2006)	22	100	16	94	15	100	11	91	9	89	14	93
16A	First serum calcium during the two month time period (OCT-NOV 2005)	26	96	25	96	23	100	28	96	27	96	30	90
16A	First serum calcium during the two month time period (DEC 2005-JAN 2006)	27	100	28	93	25	100	30	97	30	97	29	100
16A	First serum calcium during the two month time period (FEB-MAR 2006)	28	93	25	92	23	100	27	100	29	90	24	100

Table B: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Peritoneal Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
16B	First serum phosphorus during the two month time period (OCT-NOV 2005)	26	96	26	96	23	100	28	96	27	100	30	93
16B	First serum phosphorus during the two month time period (DEC 2005-JAN 2006)	27	93	28	96	25	100	30	100	30	93	29	100
16B	First serum phosphorus during the two month time period (FEB-MAR 2006)	26	96	25	100	23	100	27	100	29	97	24	100
16C	First serum albumin during the two month time period (OCT-NOV 2005)	26	96	26	100	23	100	28	100	28	93	30	93
16C	First serum albumin during the two month time period (DEC 2005-JAN 2006)	26	100	28	96	25	100	30	100	30	100	29	100
16C	First serum albumin during the two month time period (FEB-MAR 2006)	29	93	26	100	23	100	27	100	29	100	24	100
16D	Lab method used for albumin result (OCT-NOV 2005)	26	96	26	100	23	100	28	100	28	100	30	100
16D	Lab method used for albumin result (DEC 2005 - JAN 2006)	26	96	28	100	25	96	30	100	30	100	29	100
16D	Lab method used for albumin result (FEB-MAR 2006)	29	97	26	100	23	100	27	100	29	100	24	100
17	Was adequacy measurement done during OCT 2005 - MAR 2006	28	96	28	96	26	96	30	100	30	97	30	97
17A	Date of first adequacy measurement between 10-1-2005 to 3-31-2006	23	87	24	75	18	100	28	75	26	85	28	86
17B	Patient dialysis modality when adequacy measures were performed	23	87	24	96	18	100	28	100	26	96	28	100
17B1	Does the prescription include TIDAL dialysis (prior prescription 1)	0	0	0	0	0	0	0	0	0	0	0	0
17C	Patient weight at time of adequacy measurement (abdomen empty)	23	65	24	58	18	83	28	75	26	81	28	86
17C	Unit of measurement used for adequacy weight	23	91	24	79	18	89	28	86	26	100	28	93
17D	Weekly Kt/V urea (dialysate and urine clearance)	21	100	20	100	18	100	26	88	24	96	28	96
17E	Method by which V was calculated	21	86	20	95	18	89	26	88	24	96	28	93

Table B: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Peritoneal Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
17E	Other method to calculate V	6	83	2	100	2	100	0	0	3	100	5	100
17F	Is this creatinine clearance corrected for (dialysate and urine clearance) body surface area using standard methods	22	68	24	71	18	72	28	96	26	73	28	96
17G	Weekly creatinine clearance (dialysate and urine clearance)	21	95	20	95	18	100	26	100	25	96	27	93
17G	Units used to measure weekly creatinine clearance	20	80	21	86	17	82	28	100	24	88	26	96
17H	24 hr dialysate volume (prescribed and ultrafiltration)	22	68	21	86	17	88	28	93	26	77	27	85
17I	24 hr dialysate urea nitrogen	21	95	20	100	16	94	25	88	26	85	28	86
17J	24 hr dialysate creatinine	21	90	20	95	16	88	24	92	26	81	28	89
17K	24 hr urine volume	13	100	13	92	13	100	21	90	14	86	14	100
17K	Indicator if 24 urine was not collected	5	100	7	100	5	100	2	100	10	100	12	100
17L	24 hr urine urea nitrogen	13	100	12	92	13	100	21	81	14	71	15	93
17M	24 hr urine creatinine	13	92	12	100	13	100	19	68	14	64	15	93
17N	Serum BUN at the time this adequacy assessment was done	22	91	22	95	17	100	27	85	26	88	27	85
17O	Serum creatinine at the time this adequacy assessment was done	22	91	23	96	17	94	27	85	25	92	26	92
17P1	Most recent four hour dialysate/plasma creatinine ratio (D/Pcr) from a peritoneal equilibration test (PET)	4	100	5	80	11	91	13	92	17	100	12	92
17P2	Date of most recent (D/Pcr)	4	75	5	100	11	55	13	77	17	100	11	91
18	Was the prescription changed (following first adequacy measurement)	27	63	28	57	26	88	30	70	30	90	30	77
19	Was SECOND adequacy measurement done during NOV 2005 - MAR 2006	28	93	28	93	25	88	30	93	30	90	30	87
19A	Date of second adequacy measurement between 11-1-2005 to 3-31-2006	12	92	18	72	6	100	18	89	20	85	13	100

Table B: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Peritoneal Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
19B	Patient dialysis modality when adequacy measures were performed	12	100	18	100	6	100	18	100	20	100	13	100
19B1	Does the prescription include TIDAL dialysis (prior prescription 2)	0	0	0	0	0	0	0	0	0	0	0	0
19C	Patient weight at time of adequacy measurement (abdomen empty)	12	75	18	67	6	50	18	67	20	85	13	85
19C	Unit of measurement used for adequacy weight	12	100	18	72	6	67	18	78	20	100	13	92
19D	Weekly Kt/V urea (dialysate and urine clearance)	12	100	18	89	6	100	17	94	20	90	12	100
19E	Method by which V was calculated	12	92	18	89	6	67	17	88	20	100	12	92
19E	Other method to calculate V	3	67	2	100	0	0	0	0	3	100	3	100
19F	Is this creatinine clearance corrected for (dialysate and urine clearance) body surface area using standard methods	12	75	19	79	6	50	18	89	20	90	13	100
19G	Weekly creatinine clearance (dialysate and urine clearance)	11	100	16	94	6	83	17	94	17	94	13	92
19G	Units used to measure Weekly creatinine clearance	11	91	16	88	6	67	18	100	20	90	13	100
19H	24 hr dialysate volume (prescribed and ultrafiltration)	11	82	17	76	6	67	18	89	20	85	13	92
19I	24 hr dialysate urea nitrogen	11	100	15	93	5	100	16	81	20	90	13	100
19J	24 hr dialysate creatinine	11	100	14	86	5	100	15	87	18	83	13	100
19K	24 hr urine volume	4	100	9	78	5	100	15	87	12	92	8	100
19K	Indicator if 24 urine was not collected	7	100	6	100	1	100	0	0	5	100	3	100
19L	24 hr urine urea nitrogen	4	100	8	88	5	80	14	71	12	67	8	100
19M	24 hr urine creatinine	4	100	8	88	5	80	15	80	11	55	8	100
19N	Serum BUN at the time this adequacy assessment was done	12	92	17	88	6	83	17	88	20	90	13	100
19O	Serum creatinine at the time this adequacy assessment was done	11	100	16	94	5	100	16	94	18	83	13	100

Table B: Percent Concurrence of Original (Electronic) Data Compared to Network Abstracted Data by LDO for Peritoneal Patients

Form No.	Data Element	LDO											
		Non-LDO		DAVITA		DCI		FMC		GAMBRO		RCG	
		N	LOC	N	LOC	N	LOC	N	LOC	N	LOC	N	LOC
19P1	Most recent four hour dialysate/plasma creatinine ratio (D/Pcr) from a peritoneal equilibration test (PET)	0	0	0	0	0	0	3	100	1	100	3	67
19P2	Date of most recent (D/Pcr)	0	0	0	0	0	0	3	0	1	100	3	67
20	Was the prescription changed (following second adequacy measurement)	27	63	28	79	24	67	27	63	27	81	27	74