2007 ANNUAL REPORT
ESRD CLINICAL PERFORMANCE MEASURES PROJECT

OPPORTUNITIES TO IMPROVE CARE FOR IN-CENTER HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS

DECEMBER 2007

Department of Health and Human Services
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Data on adult and pediatric in-center hemodialysis patients are from October–December 2006

Data on adult and pediatric peritoneal dialysis patients are from October 2006–March 2007

Suggested citation for this Report is as follows:

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Note: The clinical data collected for the 2007 ESRD Clinical Performance Measures Project were from the time period of October–December 2006 for the in-center hemodialysis patients and October 2006–March 2007 for the peritoneal dialysis patients.

2008 Data Collection Effort

In 2008, we will again collect data for the ESRD Clinical Performance Measures on a national sample of adult in-center hemodialysis and peritoneal dialysis patients and all pediatric in-center hemodialysis and peritoneal dialysis patients.

Any questions about the Project may be addressed to your ESRD Network staff (APPENDIX 1).

Look for this Report, as well as other ESRD Clinical Performance Measures Project and Core Indicators Project Reports, on the Internet at: www.cms.hhs.gov/CPMProject.

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- The many other individuals in the renal community and CMS who contributed to this work.

ACRONYMS
List of Commonly Used Acronyms

AM Anemia Management

AV Arterio Venous

AVF Arteriovenous Fistula

BBA Balanced Budget Act

BCG Bromcresol Green Laboratory Method

BCP Bromcresol Purple Laboratory Method

BSA Body Surface Area

BUN Blood Urea Nitrogen

CAPD Continuous Ambulatory Peritoneal Dialysis

CCPD Continuous Cycling Peritoneal Dialysis

CI Confidence Interval

CIP Core Indicators Project

CMS Centers for Medicare & Medicaid Services

CPM Clinical Performance Measure

CQI Continuous Quality Improvement

CrCl Creatinine Clearance

DM Diabetes Mellitus

DOQI Dialysis Outcomes Quality Initiative

D/P Cr Ratio Dialysate/Plasma Creatinine Ratio

ESA Erythropoetin Stimulating Agents

ESRD End-Stage Renal Disease

FSGS Focal and Segmental Glomerulosclerosis

GFR Glomerular Filtration Rate

HCFA Health Care Financing Administration

HCQIP Health Care Quality Improvement Program

HD Hemodialysis

Hgb Hemoglobin

IV Intravenous

K/DOQI Kidney Disease Outcomes Quality Initiative

Kt/V or Kt/V_{urea} Urea Clearance x Time/the Volume of Distribution of Urea (fractional clearance of urea)

LDO Large Dialysis Organization

NIH National Institutes of Health

NIPD Nightly Intermittent Peritoneal Dialysis

NKF National Kidney Foundation

PET Peritoneal Equilibration Test

PD Peritoneal Dialysis

QA Quality Assurance

QI Quality Improvement

RRF Residual Renal Function

SD Standard Deviation

SI Units Systéme International Units

SLE Systemic Lupus Erythematosis

SPSS Statistical Package for the Social Sciences

spKt/V Single-Pool Kt/V

TSAT Transferrin Saturation

UKM Urea Kinetic Modeling

URR Urea Reduction Ratio

USRDS United States Renal Data System

VA Vascular Access

I. INTRODUCTION

The ESRD Clinical Performance Measures (CPM) Project, now in its fourteenth year, is a national effort led by the Centers for Medicare & Medicaid Services (CMS) and its eighteen ESRD Networks to assist dialysis providers to improve patient care and outcomes. Since 1994 the Project has documented continued improvements, specifically in the areas of adequacy of dialysis and anemia management. The providers of dialysis services are to be commended for their ongoing efforts to improve patient care.

The 2007 ESRD CPM Annual Report describes the findings of several important clinical measures and/or characteristics of a nationally representative random sample of adult (aged ≥ 18 years) in-center hemodialysis patients and peritoneal dialysis patients. This report also includes the findings for all in-center hemodialysis and peritoneal dialysis patients aged < 18 years.

The most recent data described in this Report are from the 2007 study period which includes the months of October-December 2006 for the in-center hemodialysis patients and October 2006-March 2007 for the peritoneal dialysis patients. This Report also compares the 2007 study period findings to findings from previous study periods AND it identifies opportunities to improve care for dialysis patients.

The full Report can be found on the Internet at www.cms.hhs.gov/CPMProject.

NOTE: Highlights of important findings from the 2007 ESRD CPM Project may be found on the following pages:

This Report contains some features or tools to assist dialysis providers in using the information from this Project. Appendices 6 and 7 (pages 67 and 68) contain Outcomes Comparison Tools (one for hemodialysis and one for peritoneal dialysis) that providers can download and use to record their facility-specific results for comparisons to national and ESRD Network findings (ESRD Network rates are only available for hemodialysis). (Note: Each provider will have to calculate its own facility-specific results to record on this tool.) Even though the national and ESRD Network hemodialysis findings included in this Report are from the time period October – December 2006 (national peritoneal dialysis findings are from the time period October 2006 – March 2007), the facility data that you calculate and enter on this form can be from any time period. Appendix 5 provides you with some ESRD Network-level hemodialysis findings that you can use to record on your ESRD Network's Outcomes Comparison Tool (Appendix 6). We encourage dialysis facilities to use these tools.

The **Background and Project Methods** section beginning on page 6, provides information on the Medicare ESRD program and why the ESRD CPM Project was initiated. Patient selection criteria and data collection and analysis methodologies are also described.

The **ESRD Clinical Performance Measures (CPMs)** section beginning on page 12, has a short summary of each CPM collected for this project as well as a brief summary of the 2007 CPM findings. Appendix 2 (page 47) provides a more detailed description of each CPM.

The **Other Significant Findings and Trends** section beginning on page 16, provides highlights of important findings from the 2007 ESRD CPM Project.

The **Adult In-Center Hemodialysis Patients, Adult Peritoneal Dialysis Patients, Pediatric In-Center Hemodialysis Patients and Pediatric Peritoneal Dialysis Patients** sections describe the CPM findings for each cohort for the 2007 study period and display tables depicting other findings.

This Report provides the dialysis community with an initial look at ESRD Network and national profiles for the clinical measures that were collected for the ESRD CPM Project. While significant improvements in care have occurred, the opportunities to improve care for dialysis patients in the U.S. in the areas of adequacy of dialysis, vascular access, and anemia management continue. Every dialysis caregiver should be familiar with the clinical practice guidelines developed by the Renal Physicians Association (1) and the National Kidney Foundation Kidney Disease Outcomes Quality Initiative (NKF-K/DOQI) (2-5). Your ESRD Network staff and Medical Review Board are also available to assist you in identifying opportunities for improvement.

In the future, the ESRD Networks, in collaboration with dialysis facilities, will continue to assess the ESRD CPMs for dialysis patients in the U.S. The purpose of this effort will be to assess improvement in care and to encourage further improvements. The ultimate goal is to improve patient care and outcomes for all ESRD patients.

Serum Albumin

Although serum albumin is not a CPM for this data collection period, it is one of the original core indicators and was chosen as an indicator for assessing mortality risk for adult in-center hemodialysis patients and adult peritoneal dialysis patients. Lower serum albumin values have been shown to be associated with diminished survival (6-8). This project collects the serum albumin value as well as the test method, (bromcresol green [BCG] method and bromcresol purple [BCP] method), because these two methods are commonly used for determining serum albumin concentrations and have been reported to yield sys-

tematically different results—the BCG method yielding higher serum albumin concentrations than the BCP method (9).

For the history of this project, mean serum albumin values < 3.5 g/dL (35 g/L) by the BCG method have been defined as an indicator of inadequate serum albumin. Since the percent of mean serum albumin values < 3.2 g/dL (32 g/L) by the BCP method was nearly the same as the percent of mean serum albumin values < 3.5 g/dL (35 g/L) by the BCG method, we have historically for the purpose of this report also defined a BCP result < 3.2 g/dL (32 g/L) as an indicator of inadequate serum albumin. In June 2000, the NKF-K/DOQI Guidelines for Nutrition in Chronic Renal Failure were published. Guideline 3 of the Clinical Practice Guidelines states that a pre-dialysis or stabilized serum albumin equal to or greater than the lower limit of normal range (approximately 4.0 g/dL [40 g/L] for the bromcresol green method) is the outcome goal (10).

Findings from this project allow us to report the percent of patients with mean serum albumin values ≥ 4.0 g/dL (40 g/L) (BCG method) or ≥ 3.7 g/dL (37 g/L) (BCP method) and the percent of patients with mean serum albumin values ≥ 3.5 g/dL (35 g/L) (BCG method) or ≥ 3.2 g/dL (32 g/L) (BCP method) for adult hemodialysis patients in each ESRD Network area and nationally, and nationally for adult peritoneal dialysis patients, pediatric hemodialysis, and pediatric peritoneal dialysis patients.

Pediatric In-Center Hemodialysis and Peritoneal Dialysis Patients

Although there are no CPMs established for the pediatric age group, demographic and clinical information from October-December 2006 were collected on all hemodialysis patients aged < 18 years and from October 2006-March 2007 on all peritoneal dialysis patients aged < 18 years in the U.S. in order to describe several core indicators of dialysis care. These core indicators include dialysis clearance, vascular access (hemodialysis only), anemia management, and serum albumin.

II. BACKGROUND AND PROJECT METHODS

A. MEDICARE'S ESRD PROGRAM

The Social Security Amendments of 1972 (PL 92-603) extended Medicare coverage to individuals with end-stage renal disease (ESRD) or chronic kidney failure who require dialysis or a kidney transplant to maintain life. To qualify for Medicare under the renal provision, a person must have ESRD and either be entitled to a monthly insurance benefit under Title II of the Social Security Act (or an annuity under the Railroad Retirement Act); or be fully or currently insured under Social Security; or be the spouse or dependent child of a person who meets at least one of these last two requirements. There is no minimum age for eligibility under the renal disease provision. The incidence of treated ESRD in the United States is 347 per million population (11). As of December 31, 2006, there were 339,983 patients receiving dialysis therapy in the United States (12).

ESRD Health Care Quality Improvement Program (HCQIP)

The CMS, which oversees the Medicare program, contracts with 18 ESRD Network Organizations throughout the United States. The ESRD Networks stimulate and facilitate improvements in the quality of care for ESRD patients throughout the U.S. In 1994, CMS, with input from the renal community, reshaped the approach of the ESRD Network program to quality assurance and improvement in order to respond to the need to improve the care of Medicare ESRD patients (13). This approach was named the ESRD Health Care Quality Improvement Program (HCQIP).

The ESRD HCQIP gives the ESRD Networks and CMS an opportunity to demonstrate that health care provided to Medicare beneficiaries with renal disease can be measurably improved. The HCQIP is based on the assumption that most health care providers welcome information and, where necessary, help in applying the tools and techniques of quality management (14).

ESRD Core Indicators Project

One activity included in the ESRD HCQIP was the national ESRD Core Indicators Project (CIP). This project was initiated in 1994 as a national intervention approach to assist dialysis providers in the improvement of patient care and outcomes. The ESRD CIP was CMS's first nationwide population-based project designed to assess and identify opportunities to improve the care of patients with ESRD (15). This project established the first consistent clinical ESRD database. 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 are considered "indicators" for use in triggering improvement activities. The ESRD CIP was merged with the ESRD CPM Project in 1999.

ESRD Clinical Performance Measures Project

Section 4558(b) of the Balanced Budget Act (BBA) of 1997 required CMS to develop and implement by January 1, 2000, a method to measure and report quality of renal dialysis services provided under the Medicare program. To implement this legislation, CMS funded the development of clinical performance measures (CPMs) based on the National Kidney Foundation (NKF) Dialysis Outcomes Quality Initiative (DOQI) Clinical Practice Guidelines (16-19).

For information regarding the development of the CPMs, refer to the 1999 Annual Report, End-Stage Renal Disease Clinical Performance Measures Project on the Internet at www.cms.hhs.gov/esrdQualityImproveInit/08_Archives.asp

On March 1, 1999, the ESRD CIP was merged with the ESRD CPM Project, and this project is now known as the ESRD CPM Project. The ESRD CPMs are similar to the core indicators with the addition of measures for assessing vascular access.

This 2007 ESRD CPM Project Annual Report provides the results of the CPMs on a sample of adult in-center hemodialysis

patients and adult peritoneal dialysis patients. Findings on all pediatric (aged < 18 years) in-center hemodialysis patients and all pediatric (aged < 18 years) peritoneal dialysis patients are also included. The Report does not provide results on a dialysis facility-specific basis. The quality of dialysis services is reported for adult and pediatric in-center hemodialysis patients for the last quarter in 2006 and adult and pediatric peritoneal dialysis patients for the time period October 2006–March 2007.

CMS and the ESRD Networks are committed to improving ESRD patient care and outcomes by providing tools that can be used by the renal community in assessing patient care processes and outcomes and by identifying opportunities for improvement. One of these tools includes data feedback reports based on the clinical information obtained from the ESRD CPM Project. We invite the renal community to provide us with ideas and feedback as to ways CMS and the Networks can best help the community to improve patient care.

B. PROJECT METHODS

The purpose of the ESRD CPM Project is to provide comparative data to ESRD caregivers to assist them in assessing and improving the care provided to dialysis patients. The data collected in 1994 (for the time period October-December 1993) established a baseline estimate for important clinical measures of care for adult in-center hemodialysis patients in the United States (20). From 1994 to 1998, CMS collected ESRD data under the ESRD CIP. The purpose of these data collections was to determine whether patterns in these clinical measures had changed and if opportunities to improve care continued to exist (21-25).

The initial data collection effort for the ESRD CPMs was conducted in 1999. This effort examined data from October–December 1998 for adult in-center hemodialysis patients, and from October 1998 to March 1999 for adult peritoneal dialysis patients. Information to calculate the CPMs was collected and further opportunities to improve care were identified (26).

This Report describes the findings from the ninth data collection effort for the ESRD CPMs which was conducted in 2007. Data were collected from October-December 2006 for adult and pediatric in-center hemodialysis patients, and from October 2006 -March 2007 for adult and pediatric peritoneal dialysis patients. These data help to determine if there are opportunities to improve care and to evaluate patterns of care across the nation.

The Sample

Annually, each ESRD Network conducts a survey of ESRD facilities to validate the census of ESRD patients in the ESRD Network at the end of the calendar year. In April 2007, a listing of adult (aged ≥ 18 years as of September 30, 2006) in-center hemodialysis and adult peritoneal dialysis patients who were alive and dialyzing on December 31, 2006, was obtained from each of the 18 ESRD Networks.

From this universe of patients, a national random sample, stratified by ESRD Network, of adult in-center hemodialysis patients was drawn. The sample size of adult in-center hemodialysis patients was selected to allow estimation of a proportion with a 95% confidence interval (CI) around that estimate no larger than 10 percentage points (i.e., ± 5%) for ESRD Network-specific estimates of the key hemodialysis CPMs and other indicators. Additionally, a 30% over-sample was drawn to compensate for an anticipated non-response rate and to assure a large enough sample of the adult in-center hemodialysis patient population who were dialyzing at least six months prior to October 1, 2006. The final sample consisted of 8,937 adult in-center hemodialysis patients.

The peritoneal dialysis patient sample included a random selection of 5% of adult peritoneal dialysis patients in the nation. Additionally, a 10% over-sample was drawn to compensate for an anticipated non-response rate. The final sample consisted of 1,474 peritoneal dialysis patients.

All pediatric (aged < 18 years) in-center hemodialysis patients in the U.S. (n = 720) and all pediatric peritoneal dialysis patients in the U.S. (n = 759) were included in the 2007 ESRD CPM Study.

C. SAMPLE SELECTION

Data Collection

Two data collection forms were used: a four-page in-center hemodialysis form and a four-page peritoneal dialysis form (Appendices 3, 4); the use of these forms was authorized through the National Institutes of Health (NIH) clinical exemption process. Descriptive information on each selected patient and dialysis facility was printed onto the data collection forms that were downloaded by ESRD Networks from a custom database application. If demographic information (e.g., name, date of birth, race) or clinical information (e.g., date that initial dialysis occurred) was incorrect, facility staff were asked to correct the information on the forms. Staff at ESRD facilities were also asked to abstract clinical information from the medical record of each selected patient, and were instructed to obtain ethnicity information from the patient.

Electronic data for some of the data elements were accepted from the large dialysis organizations (LDOs) (Fresenius Medical Care N.A., Dialysis Clinic, Inc., and Davita, Inc.) The electronically submitted data were printed onto paper forms, and these paper forms were sent to facilities for sampled patients. Facility staff were instructed to supply the data not already provided on the paper form. These updated paper collection forms were then forwarded to the appropriate ESRD Network, where data were reviewed for acceptability and manually entered using a custom database application.

Facilities that were not part of an LDO (non-LDO facilities) with one or more patients in the samples received a blank paper data collection form as in past study years. Clinical information contained in the medical record was abstracted for each patient in the adult hemodialysis sample and for all pediatric in-center hemodialysis patients who received in-center hemodialysis at any time during October, November, and December 2006.

Clinical information contained in the medical records was also abstracted for each patient in the adult peritoneal dialysis sample and for all pediatric peritoneal dialysis patients who were receiving peritoneal dialysis at any time during October 2006-March 2007. The completed data collection forms were then forwarded to the appropriate ESRD Network, where data were reviewed for acceptability and manually entered using a custom database application.

In September 2007, each ESRD Network completed data entry of the forms. The data were then forwarded to CMS's contractor where the data were aggregated and analyzed.

Adult In-Center Hemodialysis

Initial analyses for the CPMs and other indicators focused on the following elements: paired pre- and post-dialysis BUN values with patient height and weight and dialysis session length (used to calculate spKt/V values); hemoglobin values; vascular access information; and serum albumin.

Inclusion of a case in the analysis file required that data be available for at least one of the months in the three-month project period, with at least one paired pre- and post-dialysis BUN, at least one hemoglobin, and at least one serum albumin. We were able to include for analysis 8,740 of the 8,937 patients from the sample (response rate = 97.8%) (TABLE 1). In the vascular access section, some findings are presented for incident patients (see definition of incident patients, Table 9 page 25) alone. Other findings in this section are presented for prevalent or all patients, which includes incident patients.

Characteristics regarding the gender, race, ethnicity, age, diagnosis, and duration of dialysis (years) for these patients are shown in Table 2. As expected, the characteristics of this random sample were very similar to the characteristics of the overall U.S. hemodialysis population (11). Data regarding erythropoetin stimulating agent (ESA) use, serum ferritin concentrations, transferrin saturation, iron use, and actual time on dialysis were also analyzed.

For this Report, each patient's mean value for the three-month project period was determined from the available data for the following items: spKt/V (calculated using the Daugirdas II formula [27]), dialysis session length, hemoglobin, transferrin saturation, serum ferritin concentration, and serum albumin. Because we had data from a stratified random sample of patients (i.e., a separate random sample from each of the 18 ESRD Networks), it was necessary to weight the collected data in order to obtain unbiased estimates of mean clinical values for the total population. This weighting was done according to the proportion of each ESRD Network's total population sampled. Aggregate national results shown in this report were derived from weighted data using Statistical Package for the Social Science (SPSS) software (28).ESRD Network-specific comparisons were derived from unweighted data.

In 2005, CMS launched the Fistula First Breakthrough Initiative. The goal of this initiative is to increase the percentage of patients using an AV Fistula as their access to at least 66% by 2010. Findings from this project allow us to report progress towards this goal.

TABLE 1: *Number of adult in-center hemodialysis patients in each Network in December 2006, sample size and response rate for the 2007 ESRD CPM Project.*

Ntwk	# HD Facs Dec '06^	# HD Pts Dec '06	# HD Facs in Sample	Pt Sample Size	Accepted Forms^^	Response Rate
1	158	10023	138	490	484	98.8%
2	240	21370	178	502	486	96.8%
3	150	13338	130	493	487	98.8%
4	248	14048	196	493	485	98.4%
5	303	18398	219	498	488	98.0%
6	506	29831	295	501	490	97.8%
7	313	17767	212	502	483	96.2%
8	302	17405	224	498	488	98.0%
9	408	22231	243	500	484	96.8%
10	205	12932	154	498	479	96.2%
11	376	19596	236	498	481	96.6%
12	249	11198	188	492	476	96.7%
13	264	12354	200	494	487	98.6%
14	399	28258	266	500	485	97.0%
15	237	14145	177	493	487	98.8%
16	139	7890	117	483	480	99.4%
17	183	15893	147	497	495	99.6%
18	261	25044	198	505	495	98.0%
Total	**4941**	**311721**	**3518**	**8937**	**8740**	**97.8%**

^ Source: ESRD Networks 1-18 Annual Reports, 2006.

^^ A form was considered accepted if the patient met the selection criteria for inclusion in the study and if the data were provided for at least one of the months in the fourth quarter of 2006 for the following items: 1) hemoglobin; 2) paired pre- and post-dialysis BUN values; and 3) serum albumin value.

Two or more monthly values for these clinical measures were available for 96% of patients for hemoglobin and 96% for serum albumin by either BCG or BCP method. Monthly hemoglobin values were available for 91% of patients. At least one monthly paired pre-and post-dialysis BUN value was available for 100% of the patients, and two or more were available for 95%. Monthly paired pre-and post-dialysis BUN values were available for 85% of patients.

Adult Peritoneal Dialysis

The initial analysis focused on the adequacy of peritoneal dialysis CPMs, anemia management CPMs, and serum albumin values. Inclusion of a case for analysis required that the patient received peritoneal dialysis at least one month during the time period October 2006–March 2007, and that at least one hemoglobin and at least one serum albumin value were reported during the six-month study period. Of the 1,474 patients sampled, 1,433 patients were included in the sample for analysis (97.2% response rate) (TABLE 3). Selected patient characteristics of this sample for analysis were similar to the characteristics of the overall U.S. peritoneal dialysis population (TABLE 4).

For this Report, each patient's mean value for the six-month study period was determined from available data for the following items: weekly $Kt/V_{urea,}$ weekly creatinine clearance, hemoglobin, serum albumin, prescribed epoetin or darbepoetin dose, serum ferritin concentration, and transferrin saturation. Informa-

TABLE 2: *Characteristics of adult in-center hemodialysis patients in the 2007 ESRD CPM Project compared to those of all in-center hemodialysis patients in the U.S. in 2005.*

Patient Characteristic	2007 CPM Sample for Analysis		All U.S. in 2005*	
	# ^	%	# in 1,000s	%
TOTAL	**8,740**	**100**	**311.9**	**100**
GENDER				
Male	4911	56	169.9	54
Female	3829	44	142.0	46
RACE				
American Indian/ Alaska Native	149	2	4.7	2
Asian/Pacific Islander	423	5	13.4	4
Black or African American	3185	36	119.2	38
White	4960	57	169.9	54
Other/Unknown	23	<1	4.7	2
ETHNICITY				
Hispanic	1253	14	46.9	15
Non-Hispanic	7475	86	265.0	85
AGE GROUP (years)				
18 - 49	1858	21	69.0	22
50 - 59	1872	21	66.3	21
60 - 64	1018	12	36.2	12
65 - 69	997	11	36.4	12
70 - 79	1934	22	67.1	22
80+	1060	12	37.0	12
CAUSE of ESRD				
Diabetes Mellitus	3795	43	136.6	44
Hypertension	2293	26	89.0	29
Glomerulonephritis	848	10	33.6	11
Other/Unknown	1804	21	52.7	17
DURATION OF DIALYSIS (years)				
< 0.5	1052	12		
0.5 - 0.9	989	11		
1.0 - 1.9	1608	18		
2.0 - 2.9	1150	13		
3.0 - 3.9	935	11		
4.0 +	2924	33		

* USRDS: 2007 Annual Data Report, Bethesda, MD, National Institutes of Health, 2006. Table D.11
^ Subgroup totals may not equal total due to missing data
Note: Percentages may not add up to 100% due to rounding.

tion on iron prescription and route of administration was collected. The data are from a random sample, not stratified by ESRD Network; thus, only national aggregate data are reported. No ESRD Network-specific or facility-specific analyses were conducted.

In 2006, the KDOQI Clinical Practice Guidelines and Clinical Practice Recommendations for Peritoneal Dialysis Adequacy were updated and published. Guideline 2 (Peritoneal Dialysis Solute Clearance Targets and Measurements) of the Clinical Practice Guidelines for Peritoneal Dialysis Adequacy states for patients with and without renal kidney function the minimal "delivered" dose of total small-solute clearance should be a total (peritoneal and kidney) Kt/V_{urea} of at least 1.7 per week (29). Findings from this project allow us to report the percent of patients with mean Kt/V_{urea} values ≥ 1.7 per week nationally for adult peritoneal dialysis patients.

TABLE 3: *Number of adult peritoneal dialysis patients in each Network in December 2006, sample size and response rate for the 2007 ESRD CPM Project.*

Network	# PD Pts Dec 2006	Sample Size	Acceptable Forms^	Response Rate
1	1087	58	56	96.6%
2	1171	68	67	98.5%
3	876	39	38	97.4%
4	916	53	53	100.0%
5	1618	96	96	100.0%
6	2593	137	134	97.8%
7	1404	80	78	97.5%
8	1759	107	103	96.3%
9	2106	107	102	95.3%
10	1106	64	63	98.4%
11	1605	77	71	92.2%
12	1245	54	51	94.4%
13	1079	59	59	100.0%
14	2005	121	118	97.5%
15	1256	70	69	98.6%
16	1057	60	60	100.0%
17	1889	115	114	99.1%
18	2011	109	101	92.7%
TOTAL	**26783**	**1474**	**1433**	**97.2%**

A form was considered acceptable if the patient met the selection criteria for inclusion in the study and if data were provided at least once during the six-month study period for hemoglobin and serum albumin.

Two or more values were available for 98% of patients for hemoglobin and 97% for serum albumin by either BCG or BCP methods. Three hemoglobin values were available for 82% of patients; three serum albumin values were available for 84% of patients.

Pediatric In-Center Hemodialysis Patients

Inclusion of a pediatric in-center hemodialysis record for analysis required that data were available for at least one of the months in the three-month project period, with at least one paired pre- and post-dialysis BUN, at least one hemoglobin, and at least one serum albumin. Of the 720 pediatric hemodialysis patients, 681 patients were included in the sample for analysis (95%). Selected patient characterstics of this sample for analysis are shown in Table 5.

For this Report, each patient's mean value for the three-month project period was determined from the available data for the following items: spKt/V, dialysis session length, hemoglobin, transferrin saturation, serum ferritin concentration, prescribed epoetin or darbepoetin dose, and serum albumin. Information on iron prescription and route of iron administration was collected. The data were collected on all pediatric in-center hemodialysis patients aged < 18 years in the U.S. Only national aggregate data are reported. No ESRD Network-specific or facility-specific analyses were conducted.

***TABLE 4**: Characteristics of adult peritoneal dialysis patients in the 2007 ESRD CPM Project compared to those of all peritoneal dialysis patients in the U.S. in 2005.*

Patient Characteristics	2007 CPM Sample for Analysis		All U.S. in 2005*	
	#^	%	# in1,000s	%
TOTAL	**1,433**	**100**	**25.9**	**100**
GENDER				
Male	744	52	13.4	52
Female	689	48	12.5	48
RACE				
American Indian/ Alaska Native	12	1	0.3	1
Asian/Pacific Islander	107	6	1.5	6
Black or African American	366	26	6.8	26
White	946	66	16.9	65
Other/Uknown	*	*	0.4	2
ETHNICITY				
Hispanic	185	13	3.3	13
Non-Hispanic	1246	87	22.6	87
AGE GROUP (years)				
18 - 49	525	37	8.3	32
50 - 59	327	23	6.1	24
60 - 64	186	13	2.8	11
65 - 69	130	9	2.5	10
70 - 79	191	13	4.0	15
80+	74	5	1.3	5
CAUSE of ESRD				
Diabetes Mellitus	487	34	8.8	34
Hypertension	317	22	6.3	24
Glomerulonephritis	261	18	4.8	19
Other/Unknown	368	26	6.0	23
DURATION OF DIALYSIS (years)				
< 0.5	159	11		
0.5 - 0.9	221	15		
1.0 - 1.9	324	23		
2.0 - 2.9	211	15		
3.0 - 3.9	147	10		
4.0 +	357	25		

*USRDS: 2007 Annual Data Report, Bethesda, MD, National Institutes of Health, 2007. Table D.11
^Subgroup totals may not equal total due to missing data.
Note: Percentages may not add up to 100% due to rounding.

Pediatric Peritoneal Dialysis Patients

Inclusion of a pediatric peritoneal dialysis record for analysis required that the patient received peritoneal dialysis at least one month during the time period October 2006-March 2007 and that at least one hemoglobin value and at least one serum albumin value were reported during the six-month study period. Of the 759 pediatric peritoneal dialysis patients identified, 740 (97%) were included in the sample for analysis (TABLE 6).

For this Report, each patient's mean value for the six-month study period was determined from available data for the following items: weekly Kt/V_{urea}, weekly creatinine clearance, hemoglobin, serum albumin, prescribed epoetin or darbepoetin dose, serum ferritin concentration, and transferrin saturation. Information on iron prescription and route of administration was collected. The data were collected on all pediatric peritoneal dialysis patients aged < 18 years in the U.S. Only national aggregate data are reported. No ESRD Network-specific or facility-specific analyses were conducted.

In 2006, the KDOQI Clinical Practice Guidelines and Clinical Practice Recommendations for Peritoneal Dialysis Adequacy were updated and published. Clinical Practice Recommendations for Guideline 6 (Pediatric Peritoneal Dialysis) states for patients with and without renal kidney function the minimal "delivered" dose of total small-solute clearance should be a total (peritoneal and kidney) Kt/V_{urea} of at least 1.8 per week (29). Findings from this project allow us to report the percent of patients with mean Kt/V_{urea} values ≥ 1.8 per week nationally for pediatric peritoneal dialysis patients.

D. REPORT FORMAT

This Report describes the clinical performance measures and other findings for both the adult in-center hemodialysis patient sample and the adult peritoneal dialysis patient sample for the following study periods: October–December 2006 for the adult in-center hemodialysis patients, and October 2006–March 2007 for the adult peritoneal dialysis patients. This report also describes findings on clinical parameters of care for pediatric in-center hemodialysis and peritoneal dialysis patients in the U.S. for October-December 2006 (hemodialysis) and October 2006-March 2007 (peritoneal dialysis).

The national results are presented separately in tables by gender, race, ethnicity, age group (for adult patients: 18-44, 45-54, 55-64, 65-74, and 75+ years of age, for pediatric patients: 0-4, 5-9, 10-14, and 15 to < 18 years of age), diagnosis of ESRD, and duration of dialysis. The diagnoses are categorized as diabetes mellitus, hypertension, glomerulonephritis, and other/unknown for adult patients. In some instances clinical characteristics for patients in each ESRD Network area are also shown.

TABLE 5: *Characteristics of pediatric (aged < 18 years) in-center hemodialysis patients in the 2007 ESRD CPM Project.*

Patient Characteristics	2007 CPM Project #^	%
TOTAL	**681**	**100**
GENDER		
Male	380	56
Female	301	44
RACE		
American Indian/Alaska Native	17	2
Asian/Pacific Islander	18	3
Black or African American	255	37
White	386	57
Other/Unknown	*	*
ETHNICITY		
Hispanic	213	31
Non-Hispanic	466	68
AGE GROUP (years)		
0 - 4	43	6
5 - 9	65	10
10 - 14	211	31
15 to <18	362	53
CAUSE of ESRD		
Congenital / Urologic	172	25
Glomerulonephritis	89	13
FSGS^^	99	15
SLE^^^	42	6
Cystic Disease	*	*
Hypertension	26	4
Other/Unknown	243	36
DURATION OF DIALYSIS (years)		
< 0.5	120	18
0.5 - 0.9	107	16
1.0 - 1.9	136	20
2.0 - 2.9	84	12
3.0 - 3.9	46	7
4.0 +	178	26

^ Subgroup totals may not equal total due to missing data.
^^ FSGS - Focal and Segmental Glomerulosclerosis
^^^ SLE - Systemic Lupus Erythematosis
* Value suppressed because n < 11
Note: Percentages may not add up to 100% due to rounding.

A form was considered acceptable if the patient met the selection criteria for inclusion in the study and if data were provided at least one of the months in the fourth quarter of 2006 for the following items: 1) hemoglobin; 2) paired pre- and post-dialysis BUN values; and 3) serum albumin value.

Two or more monthly values for these clinical measures were available for 95% of patients for hemoglobin and 94% for serum albumin by either BCG or BCP method. Monthly hemoglobin values were available for 86% of patients. At least one monthly paired pre- and post-dialysis BUN value was available for 100% of patients, and two or more were available for 92%. Monthly paired pre- and post-dialysis BUN values were available for 79% of patients.

TABLE 6: *Characteristics of pediatric (aged < 18 years) peritoneal dialysis patients in the 2007 ESRD CPM Project.*

Patient Characteristic	2007 CPM Project #^	%
TOTAL	**740**	**100**
GENDER		
Male	411	56
Female	329	44
RACE		
American Indian/Alaska Native	15	2
Asian/Pacific Islander	19	3
Black or African American	198	27
White	504	68
Other/Unknown	*	*
ETHNICITY		
Hispanic	245	33
Non-Hispanic	492	66
AGE GROUP (years)		
0 - 4	184	25
5 - 9	129	17
10 - 14	216	29
15 to <18	211	29
CAUSE of ESRD		
Congenital / Urologic	253	34
Glomerulonephritis	55	7
FSGS^^	103	14
SLE^^^	19	3
Cystic Disease	32	4
Hypertension	13	2
Other/Unknown	265	36
DURATION OF DIALYSIS (years)		
< 0.5	164	22
0.5 - 0.9	146	20
1.0 - 1.9	166	22
2.0 - 2.9	93	13
3.0 - 3.9	42	6
4.0 +	123	17

^ Subgroup totals may not equal total due to missing data.
^^ FSGS - Focal and Segmental Glomerulosclerosis
^^^ SLE - Systemic Lupus Erythematosis
* Value suppressed because n < 11
Note: Percentages may not add up to 100% due to rounding.

A form was considered acceptable if the patient met the selection criteria for inclusion in the study and if data were provided at least once during the six-month study period for hemoglobin and serum albumin.

Two or more values were available for 98% of patients for hemoglobin and 97% for serum albumin by either BCG or BCP methods. Three hemoglobin values were available for 84% of patients; three serum albumin values were available for 78% of patients.

III. CLINICAL PERFORMANCE MEASURES (CPMs)

The clinical information abstracted by facility staff is used in this Report to describe some of the CPMs that were developed from the NKF-DOQI Guidelines and other quality indicators for several aspects of care for adult dialysis patients. These CPMs do not apply to patients under the age of 18 years. The CPMs were developed in the areas of hemodialysis and peritoneal dialysis adequacy, vascular access and anemia management. A complete description of the 13 CPMs appears in Appendix 2 (p. 47).

The Hemodialysis Adequacy CPMs described in this Report are:

CPM I. The patient's delivered dose of hemodialysis is measured at least once per month.

CPM II. The patient's delivered dose of hemodialysis reported in the patient's chart is calculated by using formal urea kinetic modeling (UKM) or the Daugirdas II formula for spKt/V.

CPM III. The patient's (for those patients on hemodialysis six months or longer and dialyzing three times per week) delivered dose calculated from data points on the data collection form (monthly measurement averaged over the three-month study period) of hemodialysis is spKt/V $\geq$ 1.2.

The clinical information collected to calculate these adequacy CPMs also allows us to describe other aspects of dialysis adequacy (or indicators), such as the mean spKt/V values for hemodialysis patients in each ESRD Network area and in the US.

The Peritoneal Dialysis Adequacy CPMs described in this Report are:

CPM I. The patient's total solute clearance for urea and creatinine is measured routinely (defined for this report as at least once during the six-month study period).

CPM II. The patient's total solute clearance for urea (weekly Kt/V_{urea}) and creatinine (weekly creatinine clearance) is calculated in a standard way. (See Peritoneal Dialysis Adequacy CPM II in Appendix 2, p. 48).

CPM III. For patients on continuous ambulatory peritoneal dialysis (CAPD), the delivered peritoneal dialysis dose is a total Kt/V_{urea} of at least 2.0 per week and a total creatinine clearance (CrCl) of at least 60 L/week/1.73 m^2 OR evidence that the dialysis prescription was changed if the adequacy measurements were below these thresholds.

For cycler patients, the weekly delivered peritoneal dialysis dose is a total Kt/V_{urea} of at least 2.1 and a weekly total creatinine clearance of at least 63L/week/1.73 m^2 OR evidence that the dialysis prescription was changed if the adequacy measurements were below these thresholds.

The Vascular Access CPMs described in this Report are:

CPM I. A primary arteriovenous fistula (AVF) should be the access for at least 50% of all new patients initiating hemodialysis. A native AVF should be the primary access for 40% of prevalent patients undergoing hemodialysis.

CPM II. Less than 10% of chronic maintenance hemodialysis patients should be maintained on catheters continuously for $\geq$ 90 days as their permanent chronic dialysis access.

CPM III. A patient's AV graft should be routinely monitored for stenosis. (See Vascular Access CPM III in Appendix 2, p. 49 for a list of techniques and frequency of monitoring used to screen for the presence of stenosis).

The Anemia Management CPMs described in this Report are:

CPM I. The target hemoglobin for patients prescribed epoetin is 11-12 g/dL (110-120 g/L). Patients with a mean hemoglobin > 12 g/dL (120 g/L) and not prescribed epoetin were excluded from analysis for this CPM.

CPM IIa. For anemic patients (hemoglobin < 11 g/dL (110 g/L) in at least one study month) or patients prescribed epoetin, the percent transferrin saturation and serum ferritin concentration are assessed (measured) at least once in a three-month period for hemodialysis patients and at least two times during the six-month study period for peritoneal dialysis patients.

CPM IIb. For anemic patients (hemoglobin < 11 g/dL (110 g/L) in at least one study month) or patients prescribed epoetin, at least one serum ferritin concentration $\geq$ 100 ng/mL and at least one transferrin saturation $\geq$ 20% were documented during the three-month study period for hemodialysis patients or during the six-month study period for peritoneal dialysis patients.

CPM III. All anemic patients (hemoglobin < 11 g/dL (110 g/L) in at least one study month) or patients prescribed epoetin, and with at least one transferrin saturation < 20% or at least one serum ferritin concentration < 100 ng/mL during the study period are prescribed IV iron; UNLESS the mean transferrin saturation was $\geq$ 50% or the mean serum ferritin concentration was $\geq$ 800 ng/mL; UNLESS the patient was in the first three months of dialysis and was prescribed oral iron.

The clinical information collected to calculate these CPMs allows us to describe other aspects of anemia management (or indicators). For example, the percents of patients with a mean hemoglobin $\geq$ 11 g/dL (110 g/L) and < 10 g/dL (100 g/L) are profiled in this Report. Additionally, the percents of all patients with mean transferrin saturation $\geq$ 20%, mean serum ferritin concentration $\geq$ 100 ng/mL, and the percents of patients prescribed ESA or IV iron are profiled.

Information was collected on epoetin and darbepoetin use and on IV iron doses again during this data collection period. All monthly recorded data were used in determining the percent of patients prescribed epoetin or darbepoetin. All monthly recorded data were used in determining the percent of patients prescribed any IV iron product.

The CPMs may have been calculated slightly differently than other findings reported in this Annual Report. Please refer to Appendix 2 (p. 47) for the specific inclusion and exclusion criteria for each CPM.

Note Regarding Race

In this Report several tables describe important clinical characteristics of adult in-center hemodialysis and peritoneal dialysis patients for the following race groups: American Indian/Alaska Native, Asian/Pacific Islander, Black, White, and Other/Unknown. In the figures, these clinical characteristics are compared by race group; however, the comparisons are limited to White vs. Black. The reason for this is sample size. Because of small sample size (TABLE 2), the 95% confidence intervals for estimates for the American Indian/Alaska Native, Asian/Pacific Islander, and Other/Unknown race groups are very broad. On the other hand, the sample size for White and Black patients was large enough to provide stable estimates; i.e., the 95% confidence intervals are narrow.

CPM HIGHLIGHTS FROM THE NATIONAL 2007 ESRD PROJECT

Random Sample of Adult In-Center Hemodialysis (HD) Patients (n=8,740 sample for analysis) The data are from OCT-DEC 2006:

HD Adequacy

- 87% of patients had monthly adequacy measurements performed (HD Adequacy CPM I)
- 74% of patients had their delivered spKt/V calculated using either UKM or the Daugirdas II formula (27) (HD Adequacy CPM II)
- 93% of patients on dialysis for 6 months or more and dialyzing three times a week had a mean delivered adequacy dose of spKt/V ≥ 1.2 calculated using the Daugirdas II formula (HD Adequacy CPM III)

Vascular Access (VA)

- 41% of incident patients were dialyzed using an AV fistula (AVF) (VA CPM I)
- 45% of prevalent patients were dialyzed using an AVF (VA CPM I) (FIGURE 1)
- 22% of prevalent patients were dialyzed with a chronic catheter continuously for 90 days or longer (VA CPM II) (FIGURE 1)
- 70% of prevalent patients with an AV graft were routinely monitored for the presence of stenosis (VA CPM III)

Anemia Management (AM)

- 33% of targeted patients prescribed epoetin had a mean hemoglobin 11.0-12.0 g/dL (110-120 g/L) (AM CPM I)
- 97% of patients who met the inclusion criteria[1] had at least one documented transferrin saturation value and one documented serum ferritin concentration value during the study period (AM CPM IIa)
- 82% of patients who met the inclusion criteria[1] had at least one transferrin saturation ≥ 20% and one serum ferritin concentration ≥ 100 ng/mL during the study period (AM CPM IIb)
- 83% of patients who met the inclusion criteria[1] were prescribed intravenous iron in at least one month during the study period (AM CPM III)

[1]See Appendix 1 for a description of the inclusion and exclusion criteria.

ESRD CPM Trends (percent of patients meeting the CPMs)[1]	Year 1998	2000	2002	2004	2005	2006
HD Adequacy						
HD Adequacy CPM I (monthly measurement of delivered HD dose)	79	80	83	83	82	87
HD Adequacy CPM II (method of measurement of delivered HD dose)	99[4]	52	67	76	76	74
HD Adequacy CPM III (mean delivered HD dose ≥ 1.2)	85	91	92	95	94	93
Vascular Access						
Vascular Access CPM Ia (incident patients with an AVF[2] as access)	26	27	27	37	54	41
Vascular Access CPM Ib (prevalent patients with an AVF as access)	26	30	33	39	44	45
Vascular Access CPM II (dialyzed with a chronic catheter[3])	14	17	21	21	21	22
Vascular Access CPM III (AV graft was routinely monitored for stenosis)	37	47	61	67	69	70
Anemia Management						
Anemia CPM I (mean Hgb 11-12 g/dL)	36	38	36	34	35	33
Anemia CPM IIa (iron stores assessed for anemic patients or patients prescribed Epoetin)	90	91	94	95	95	97
Anemia CPM IIb (iron stores maintained at K/DOQI targets)	67	71	78	80	80	82
Anemia CPM III (administration of IV iron to anemic patients)	63	73	79	82	81	83

[1] See Appendix 1 for a description of the inclusion and exclusion criteria.
[2] Arteriovenous fistula
[3] For 90 days or longer
[4] For 1998 only, accepted HD dose calculated using urea kinetic modeling (UKM), Daugirdas II, or urea reduction ratio (URR); for all subsequent years, only UKM or Daugirdas II accepted.

NOTE: Please note that when a single year such as 2006 is used in displaying data, it refers to October, November, and December of that year for the hemodialysis patients.

CPM HIGHLIGHTS FROM THE NATIONAL 2007 ESRD PROJECT

Random Sample of Adult Peritoneal Dialysis (PD) Patients (n=1,433 sample for analysis) The data are from OCT 2006–MAR 2007:

PD Adequacy

- 84% of patients had at least one measured total solute clearance for urea and creatinine (PD Adequacy CPM I) during the six-month study period (FIGURE 2)
- 49% of patients had their total solute clearance for urea and creatinine calculated in a standard way[1] (PD Adequacy CPM II) (FIGURE 2)
- 75% of CAPD patients had a mean weekly Kt/V_{urea} of ≥ 2.0 and a mean weekly creatinine clearance ≥ 60L/week/1.73m^2 OR there was evidence the dialysis prescription was changed if the adequacy measurements were below these thresholds during the six-month study period (PD Adequacy CPM III) (FIGURE 3)
- 64% of Cycler[2] patients had a mean weekly Kt/V_{urea} of ≥ 2.1 and a mean weekly creatinine clearance ≥ 63 L/week/1.73m^2 OR there was evidence the dialysis prescription was changed if the adequacy measurements were below these thresholds during the six-month study period (PD Adequacy CPM III) (FIGURE 3)

Anemia Management (AM)

- 37% of targeted patients prescribed epoetin had a mean hemoglobin between 11.0-12.0 g/dL (110-120 g/L) (AM CPM I)
- 74% of patients who met the inclusion criteria[3] for this CPM had at least two documented transferrin saturation values and two documented serum ferritin concentration values during the six-month study period (AM CPM IIa)
- 85% of patients who met the inclusion criteria[3] for this CPM had at least one transferrin saturation ≥ 20% and one serum ferritin concentration ≥ 100 ng/mL during the six-month study period (AM CPM IIb)
- 41% of patients who met the inclusion criteria[3] for this CPM were prescribed intravenous iron in at least one of the two-month periods during the six-month study period (AM CPM III)

[1] See Appendix 1 for a description of standard ways for calculating total solute clearance.
[2] For the Oct 2006-Mar 2007 collection, CCPD and NIPD modalities were not distinguishable.
[3] See Appendix 1 for a description of the inclusion and exclusion criteria.

Using the 1997 NKF-DOQI guidelines (17):
For CAPD patients: weekly Kt/V_{urea} ≥ 2.0; weekly CrCl ≥ 60 L/week/1.73m^2
For cycler patients: weekly Kt/V_{urea} ≥ 2.1; weekly CrCl ≥ 63 L/week/1.73m^2

ESRD CPM Trends (percent of patients meeting the CPMs)[1]	Year 1999	2001	2003	2005	2006	2007
PD Adequacy						
PD Adequacy CPM 1 (measurement of total solute clearance at regular intervals)	82	85	88	82	80	84
PD Adequacy CPM II (weekly Kt/V_{urea} & weekly CrCl calculated in a standard way)[2]	55	62	65	41	41	49
PD Adequacy CPM III (delivered PD dose meets K/DOQI thresholds)						
CAPD	55	69	71	73	72	75
Cycler with daytime dwell	58	62	66	59		
Cycler without daytime dwell	45	64	67	58		
Cycler[3]					59	64
Anemia Management						
Anemia CPM I (mean Hgb 11-12 g/dL)	32	39	39	33	30	37
Anemia CPM IIa (iron stores assessed for anemic patients or patients prescribed epoetin)	70	72	77	77	76	74
Anemia CPM IIb (iron stores maintained at K/DOQI targets)	72	75	81	82	83	85
Anemia CPM III (administration of IV iron to anemic patients)	17	23	32	31	39	41

[1] See Appendix 1 for a description of the inclusion and exclusion criteria.
[2] See Appendix 1 for a description of standard ways for calculating total solute clearance.
[3] For the Oct 2005-Mar 2006 and the Oct 2006-Mar 2007 collections, CCPD and NIPD modalities were not distinguishable.

NOTE: When a single year, such as 2007, is used for the peritoneal dialysis patients, it refers to January, February, and March of that year as well as October, November, and December of the previous year.

IV. OTHER SIGNIFICANT FINDINGS AND TRENDS

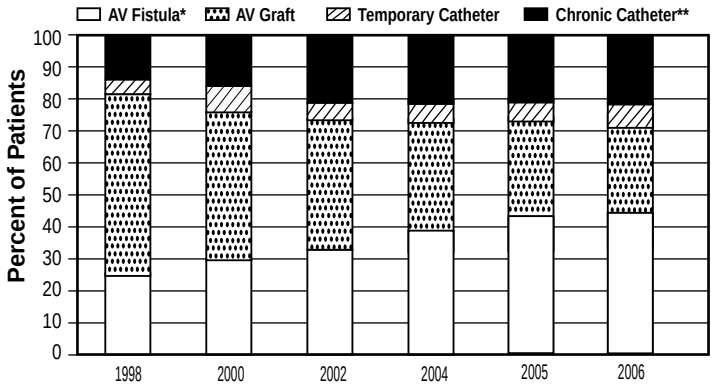
ESRD Data Trends

The figures on the following pages show the trends in the ESRD data for various study periods.

Please note that when a single year such as 2006 is used in displaying data, it refers to October, November, and December of that year for the hemodialysis patients. When a single year, such as 2007, is used for the peritoneal dialysis patients, it refers to January, February, and March of that year as well as October, November, and December of the previous year. Also, "adult" refers to ages ≥ 18 years and "pediatric" refers to ages < 18 years.

Vascular Access Trends

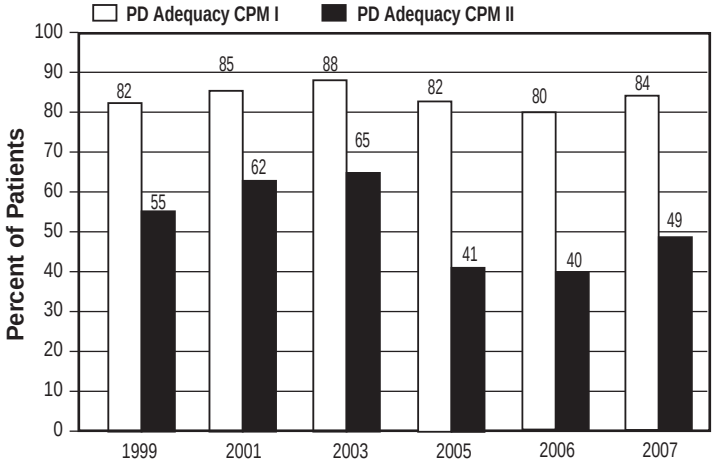
Figure 1: *Vascular access type for all adult in-center hemodialysis patients on their last hemodialysis session during the study period. 2007 ESRD CPM Project.*



* CMS has set a goal to have ≥ 66% of prevalent hemodialysis patients using an AV Fistula as their access by the year 2010.
** Chronic catheter defined as use of a catheter access continuously for 90 days or longer.

Peritoneal Dialysis Adequacy Trends

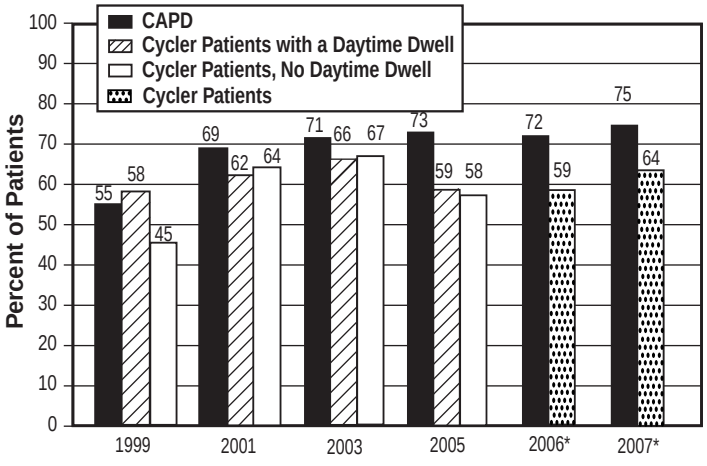
Figure 2: *Percent of adult peritoneal dialysis patients with total solute clearance for urea and creatinine measured at least once during the study period (PD Adequacy CPM I) and with total solute clearance calculated in a standard way* (PD Adequacy CPM II), October 2006-March 2007 compared to previous study periods. 2007 ESRD CPM Project.*



*See Appendix 1 for a complete description of the standard methods to calculate the solute clearance for urea and creatinine.

Peritoneal Dialysis Adequacy Trends

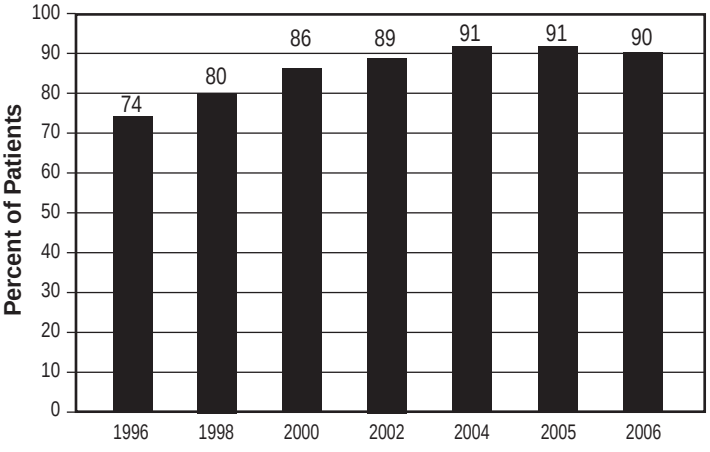
Figure 3: *Percent of adult peritoneal dialysis patients meeting 1997 NKF-DOQI guidelines for weekly Kt/V_{urea} and weekly creatinine clearance (PD Adequacy CPM III). 2007 ESRD CPM Project.*



*For collection years 2006 and 2007, CCPD and NIPD modalities were not distinguishable.

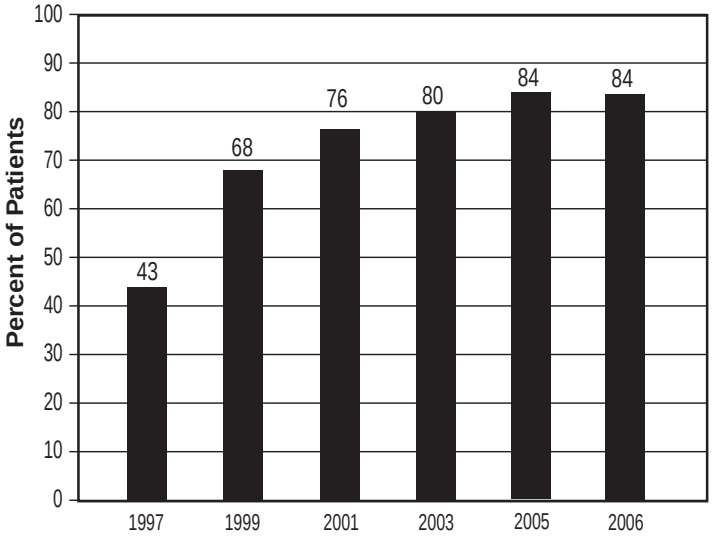
Hemodialysis Adequacy Trends

Figure 4: *Percent of adult in-center hemodialysis patients with mean delivered calculated, single session single pool (sp)Kt/V ≥ 1.2 in October-December 2006 compared to previous study periods. 2007 ESRD CPM Project.*



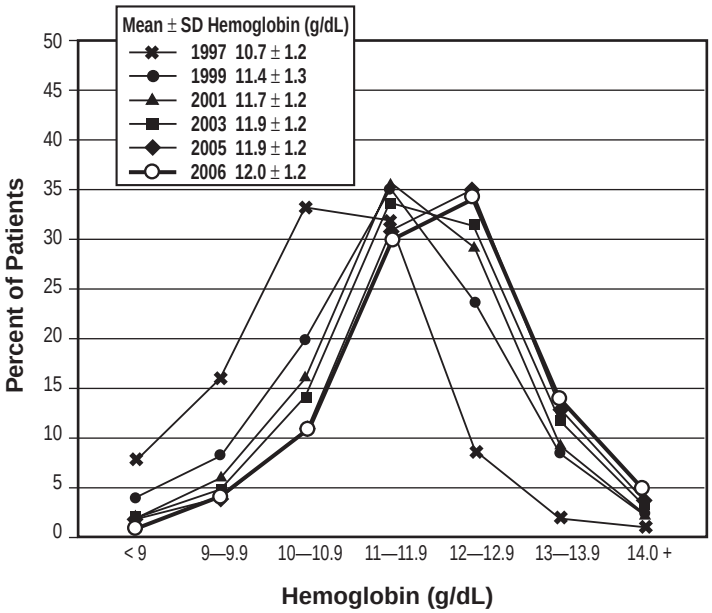
Anemia Management Trends

Figure 5: *Percent of adult in-center hemodialysis patients with mean hemoglobin ≥ 11 g/dL, October-December 2006 compared to previous study periods. 2007 ESRD CPM Project.*



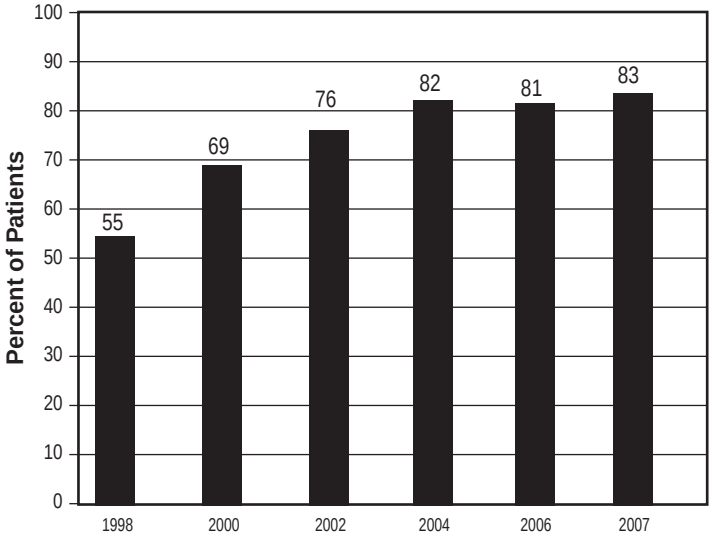
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

Figure 6: *Distribution of mean hemoglobin values for adult in-center hemodialysis patients, October-December 2006 compared to previous study periods. 2007 ESRD CPM Project.*



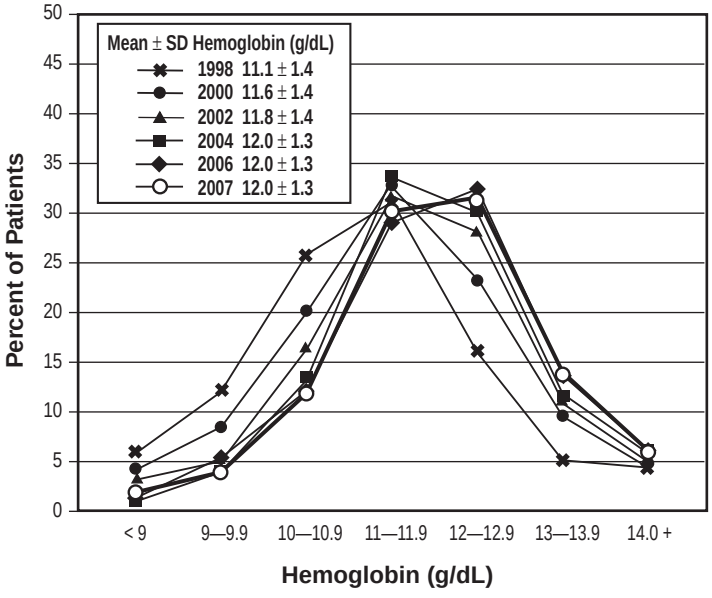
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

Figure 7: *Percent of adult peritoneal dialysis patients with mean hemoglobin ≥ 11 g/dL, October 2006-March 2007 compared to previous study periods. 2007 ESRD CPM Project.*



Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

Figure 8: *Distribution of mean hemoglobin values for adult peritoneal dialysis patients, October 2006-March 2007 compared to previous study periods. 2007 ESRD CPM Project.*



Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

Pediatric Dialysis Trends

Figure 9: *Distribution of mean delivered calculated, single session spKt/V values for pediatric (aged < 18 years) in-center hemodialysis patients, October-December 2006 compared to previous study periods. 2007 ESRD CPM Project.*

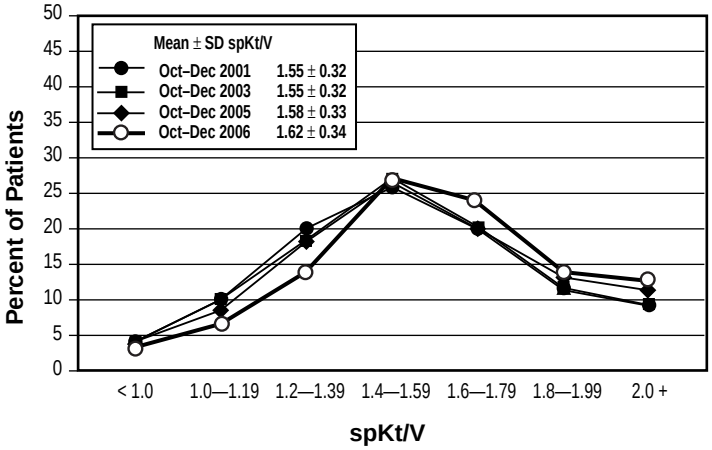
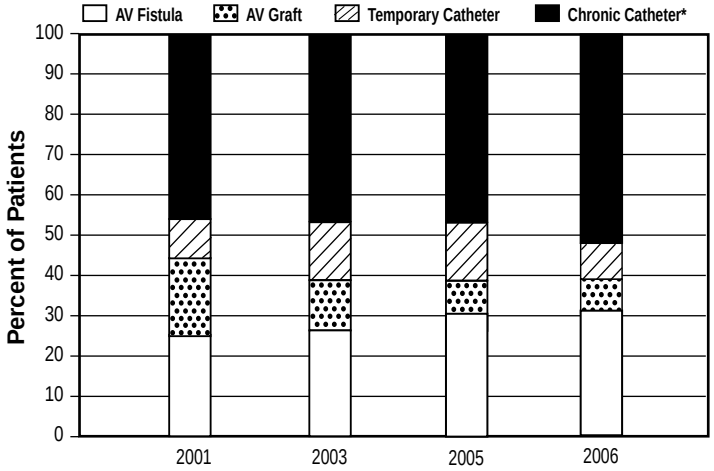
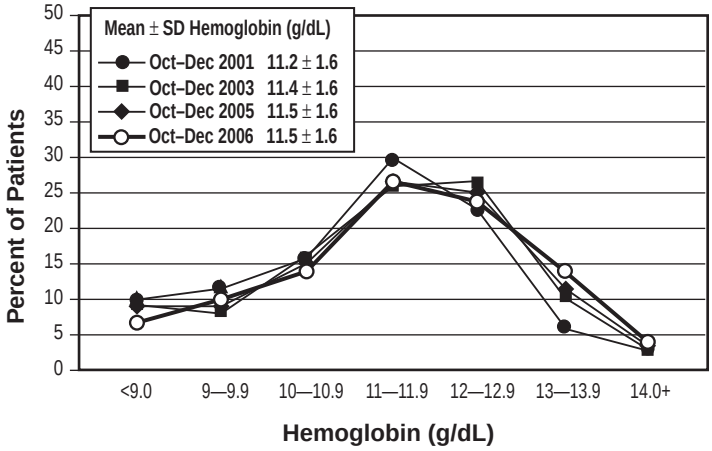


Figure 10: *Vascular access type for pediatric (aged < 18 years) in-center hemodialysis patients on their last hemodialysis session during the study period, October-December 2006 compared to previous study periods. 2007 ESRD CPM Project.*



*Chronic catheter use defined as continous catheter use 90 days or longer.

Figure 11: *Distribution of mean hemoglobin values for pediatric (aged < 18 years) in-center hemodialysis patients, October-December 2006 compared to previous study periods. 2007 ESRD CPM Project.*



Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

SELECTED SIGNIFICANT FINDINGS FROM THE NATIONAL 2007 ESRD CPM PROJECT

Random Sample of Adult In-Center Hemodialysis (HD) Patients (n=8,740 sample for analysis)
The data are from OCT-DEC 2006:

HD Adequacy

- 90% of prevalent patients had a mean delivered calculated, single session adequacy dose of spKt/V ≥ 1.2 (FIGURE 4)
- 94% of female patients and 87% of male patients were receiving dialysis with a mean delivered calculated, single session spKt/V ≥ 1.2 in OCT-DEC 2006 (TABLE 7)
- Mean ± SD spKt/V was 1.55 ± 0.27
- 87% of patients had a mean URR ≥ 65%
- Mean ± SD URR was 72.0 ± 7%
- Mean ± SD dialysis session length was 217 ± 32 minutes

Opportunity to Improve Adequacy

- 10% of patients did not have a mean spKt/V ≥1.2 during the three-month study period

Vascular Access

- 41% of incident and 45% of prevalent patients[1] were dialyzed with an AVF during their last hemodialysis session OCT-DEC 2006 (TABLE 9)
- 68% of patients with an AVF or AV graft had their access routinely monitored for the presence of stenosis during the three-month study period

Opportunities to Improve Vascular Access

- 58% of incident patients and 55% of all patients were not dialyzed with an AVF during their last hemodialysis session OCT-DEC 2006
- 32% of patients with an AVF or AV graft did not have their access routinely monitored for the presence of stenosis during the three-month study period

Anemia Management (AM)

- 84% of patients had a mean hemoglobin ≥ 11 g/dL (110 g/L) in the last quarter of 2004 (FIGURE 5, TABLE 14)
- 5% of patients had a mean hemoglobin < 10.0 g/dL (100 g/L) (TABLE 13)
- Mean ± SD hemoglobin was 12.0 ± 1.2 g/dL (120 ± 12 g/L) (FIGURE 6, TABLE 13)
- 79% of patients had a mean transferrin saturation ≥ 20% (TABLE 15)
- 95% of patients had a mean serum ferritin concentration ≥ 100 ng/mL (TABLE 15)
- 23% of patients had a mean serum ferritin > 800 ng/mL (TABLE 15)
- 70% of patients were prescribed IV iron during the study period (TABLE 15)

Opportunities to Improve Anemia Management

- 16% of patients did not have a mean hemoglobin ≥11 g/dL (110 g/L) during the three-month study period
- 21% of patients did not have a mean transferrin saturation ≥ 20% and 5% of patients did not have a mean serum ferritin ≥ 100 ng/mL

Serum Albumin

- 34% of patients had a mean serum albumin ≥ 4.0/3.7 g/dL (40/37 g/L) (BCG/BCP)[2] (TABLE 16)
- 81% of patients had a mean serum albumin ≥ 3.5/3.2 g/dL (35/32 g/L) (BCG/BCP) (TABLE 16)
- Mean ± SD serum albumin was 3.8 ± 0.4/3.5 ± 0.5 g/dL (38 ± 4/35 ± 5 g/L) (BCG/BCP)

Opportunity to Improve Serum Albumin

- 66% of patients did not have a mean serum albumin ≥ 4.0/3.7 g/dL (40/37 g/L) (BCG/BCP) during the three-month study period
- 19% of patients did not have a mean serum albumin ≥ 3.5/3.2 g/dL (35/32 g/L) (BCG/BCP) during the three-month study period

[1] CMS has set a goal to have ≥ 66% of prevalent hemodialysis patients using an AV Fistula as their access by the year 2010.
[2] BCG = bromcresol green, BCP = bromcresol purple; these are two different laboratory methods for assaying serum albumin.

SELECTED SIGNIFICANT FINDINGS FROM THE NATIONAL 2007 ESRD CPM PROJECT

Random Sample of Adult Peritoneal Dialysis (PD) Patients (n=1,433 sample for analysis)
The data are from OCT 2006–MAR 2007:

PD Adequacy[1]

- 85% of all peritoneal dialysis patients had a mean weekly $Kt/V_{urea} \geq 1.7$
- Mean weekly Kt/V_{urea} for CAPD patients was 2.31 ± 0.65
- Mean weekly Kt/V_{urea} for Cycler patients was 2.22 ± 0.64 (TABLE 18)

Opportunities to Improve Adequacy

- The adequacy of dialysis was not assessed during the 2007 study period for 16% of the sampled peritoneal dialysis patients
- 15% of all peritoneal dialysis patients did not achieve the newly identified minimal "delivered" dose of $Kt/V_{urea} \geq 1.7$

Anemia Management (AM)

- 82% of patients had a mean hemoglobin ≥ 11 g/dL (FIGURE 7)
- 5% of patients had a mean hemoglobin < 10.0 g/dL
- Mean ± SD hemoglobin was 12.0 ± 1.3 g/dL (120 ± 13 g/L) (FIGURE 8, TABLE 19)
- 85% of patients had a mean transferrin saturation ≥ 20%
- 90% of patients had a mean serum ferritin concentration ≥ 100 ng/mL
- 18% of patients had a mean serum ferritin > 800 ng/mL
- 29% of patients were prescribed IV iron during the six-month study period.

Opportunities to Improve Anemia Management

- 18% of patients did not have a mean hemoglobin ≥ 11 g/dL (110 g/L) in the 2007 study period
- 15% of patients did not have a mean transferrin saturation ≥ 20% and 10% of patients did not have a mean serum ferritin ≥ 100 ng/mL

Serum Albumin

- 19% of patients had a mean serum albumin ≥ 4.0/3.7 g/dL (40/37 g/L) (BCG/BCP)[2] (TABLE 20)
- 63% of patients had a mean serum albumin ≥ 3.5/3.2 g/dL (35/32 g/L) (BCG/BCP) (TABLE 20)
- Mean ± SD serum albumin was 3.6 ±0.5/3.3 ± 0.6 g/dL (36 ± 5/33 ± 6 g/L) (BCG/BCP)

Opportunities to Improve Serum Albumin

- 81% of PD patients did not have mean serum albumin ≥ 4.0/3.7 g/dL (40/37 g/L) (BCG/BCP) during the six-month study period
- 37% of PD patients did not have mean serum albumin ≥ 3.5/3.2 g/dL (35/32 g/L) (BCG/BCP) during the six-month study period

[1]Using the 2006 KDOQI guidelines and recommendations (29):
For peritoneal dialysis patients with and without renal kidney function: weekly $KtV_{urea} \geq 1.7$.
[2]BCG = bromcresol green, BCP = bromcresol purple; these are two different laboratory methods for assaying serum albumin.

SELECTED SIGNIFICANT FINDINGS FROM THE NATIONAL 2007 ESRD CPM PROJECT

100% Sample Pediatric In-Center Hemodialysis Patients (HD) (aged < 18 years) (n=681 sample for analysis) The data are from OCT–DEC 2006:

Clearance

- 91% of patients had a mean delivered calculated, single session adequacy dose of spKt/V ≥ 1.2 calculated using the Daugirdas II formula (26) (TABLE 21)
- Mean ± SD spKt/V was 1.62 ± 0.34 (FIGURE 9)
- Mean ± SD dialysis session length was 203 ± 30 minutes

Opportunity to Improve Clearance

- 10% of patients did not have a mean spKt/V ≥ 1.2 during the three-month study period

Vascular Access

- 31% of patients were dialyzed using an AV fistula (AVF) (FIGURE 10, TABLE 22)
- 52% of patients were dialyzed with a chronic catheter continuously for 90 days or longer (FIGURE 10)
- 64% of patients with an AVF or an AV graft had their access routinely monitored for the presence of stenosis

Opportunitiy to Improve Vascular Access

- 36% of patients with an AVF or AV graft did not have this access routinely monitored for the presence of stenosis during the three-month study period

Anemia Management

- 69% of patients had a mean hemoglobin ≥ 11 g/dL (110 g/L)
- Mean ± SD hemoglobin was 11.5 ± 1.6 g/dL (115 ± 16) g/L (FIGURE 11, TABLE 23)
- 76% of patients had a mean transferrin saturation ≥ 20%
- 82% of patients had a mean serum ferritin concentration ≥ 100 ng/mL
- 19% of patients had a mean serum ferritin > 800 ng/mL

Opportunity to Improve Anemia Management

- 31% of patients did not have a mean hemoglobin ≥ 11 g/dL (110 g/L) during the three-month study period

Serum Albumin

- 49% of patients had a mean serum albumin ≥ 4.0/3.7 g/dL (40/37 g/L) (BCG/BCP)[1] (TABLE 24)
- 82% of patients had a mean serum albumin ≥ 3.5/3.2 g/dL (35/32 g/L) (BCG/BCP) (TABLE 24)
- Mean ± SD serum albumin was 3.9 ± 0.5/3.5 ± 0.5 g/dL (39 ± 5/35 ± 5 g/L) (BCG/BCP)

Opportunity to Improve Serum Albumin

- 51% of patients did not have a mean serum albumin ≥ 4.0/3.7 g/dL (40/37 g/L) (BCG/BCP) during the three-month study period
- 18% of patients did not have a mean serum albumin ≥ 3.5/3.2 g/dL (35/32 g/L) (BCG/BCP) during the three-month study period.

[1] BCG = bromcresol green, BCP = bromcresol purple; these are two different laboratory methods for assaying serum albumin.

SELECTED SIGNIFICANT FINDINGS FROM THE NATIONAL 2007 ESRD CPM PROJECT

100% Sample Pediatric Peritoneal Dialysis Patients (PD) (aged < 18 years)
(n=740 sample for analysis)
The data are from OCT 2006 – MAR 2007:

Clearance^

- 87% of all peritoneal dialysis patients had a mean weekly $Kt/V_{urea} \geq 1.8$
- Mean weekly Kt/V_{urea} for CAPD was 2.20 ± 0.74 (TABLE 25)
- Mean weekly Kt/V_{urea} for cycler patients was 2.52 ± 0.74 (TABLE 25)

Opportunities to Improve Clearance

- 13% of all PD patients did not have a mean weekly $Kt/V_{urea} \geq 1.8$ during the six-month study period

Anemia Management

- 71% of patients had a mean hemoglobin ≥ 11 g/dL (110 g/L) (TABLE 26)
- Mean ± SD hemoglobin was 11.6 ± 1.4 g/dL (116 ± 14 g/L) (TABLE 26)
- 81% of patients had a mean transferrin saturation ≥ 20%
- 71% of patients had a mean serum ferritin concentration ≥ 100 ng/mL
- 9% of patients had a mean serum ferritin concentration > 800 ng/mL

Opportunity to improve Anemia Management

- 29% of patients did not have a mean hemoglobin ≥ 11 g/dL (110 g/L) during the six-month study period

Serum Albumin

- 27% of patients had a mean serum albumin ≥ 4.0/3.7 g/dL (40/37 g/L) (BCG/BCP) (TABLE 27)
- 64% of patients had a mean serum albumin ≥ 3.5/3.2 g/dL (35/32 g/L) (BCG/BCP) (TABLE 27)
- Mean serum albumin was 3.6 ± 0.6/3.3 ± 0.6 g/dL (36 ± 6/33 ± 6 g/L) (BCG/BCP)

Opportunity to Improve Serum Albumin

- 73% of patients did not have a mean serum albumin ≥ 4.0/3.7 g/dL (40/37 g/L) (BCG/BCP) during the six-month study period
- 36% of patients did not have a mean serum albumin ≥ 3.5/3.2 g/dL (35/32 g/L) (BCG/BCP) during the six-month study period

^Using the 2006 KDOQI guidelines and recommendations (29):
For pediatric peritoneal dialysis patients with and without renal kidney function: weekly $KtV_{urea} \geq 1.8$.

IMPORTANT NOTE

The data in this Report are intended to stimulate the development of quality improvement (QI) projects in dialysis facilities. The data collected for this project were necessarily limited: not all dialytic parameters that influence patient care for these clinical measures were collected. In addition, the project did not attempt to develop facility-specific profiles of care.

As you review this Report, ask yourself questions about how your patients' clinical characteristics compare to these national hemodialysis and peritoneal dialysis patient profiles and Network hemodialysis patient profiles. Additional information must be collected at your facility if you wish to answer these questions and develop ways to improve patient care for your patients. Your ESRD Network staff and Medical Review Board members are available to assist you in using these data in your QI activities and in developing facility-specific QI projects.

V. ADULT IN-CENTER HEMODIALYSIS PATIENTS

This section describes the findings for the sampled adult in-center hemodialysis patients for selected CPMs and other quality indicators related to adequacy of dialysis, vascular access, anemia management and serum albumin.

A national random sample of adult (≥ 18 years) in-center hemodialysis patients, stratified by Network, who were alive on December 31, 2006, was selected (n=8,937). 8,740 patients (97.8%) were included in the sample for analysis.

A. ADEQUACY OF HEMODIALYSIS

CPM Findings for October–December 2006 CPMs

Data to assess three hemodialysis adequacy CPMs were collected in 2007. The time period from which these data were abstracted was October–December 2006. The results for these CPMs are included in this section of the report (Hemodialysis Adequacy CPMs I–III).

Hemodialysis Adequacy CPM I — The patient's delivered dose of hemodialysis is measured at least once per month.

FINDING: 87% of adult in-center hemodialysis patients in the sample for analysis had documented measurements of hemodialysis adequacy (URR and/or spKt/V) for each month during the three-month study period (October–December 2006). These measurements were recorded in the patient's chart, not calculated from individual data points. An additional 9% of the patients in the sample for analysis had documented adequacy measurements for two out of the three months, and another 4% of the patients had documented adequacy measurements for one of the three months.

Hemodialysis Adequacy CPM II — The patient's delivered dose of hemodialysis recorded in the patient's chart is calculated by using formal urea kinetic modeling (UKM) or the Daugirdas II formula (for spKt/V) (26).

FINDING: 74% of adult in-center hemodialysis patients in the sample for analysis had delivered hemodialysis doses reported as spKt/V calculated using formal UKM or the Daugirdas II formula.

Hemodialysis Adequacy CPM III — The patient's delivered dose of hemodialysis calculated from data points on the data collection form (monthly measurement averaged over the three-month study period) is spKt/V ≥ 1.2 using the Daugirdas II formula (26). This CPM is calculated on the subset of patients who had been on hemodialysis therapy for six months or longer and who were dialyzing three times per week (n=7,404).

FINDING: For the last quarter of 2006, 93% of the adult in-center hemodialysis patients who met the inclusion criteria (only those patients who had been on hemodialysis therapy for six months or longer and who were dialyzing three times per week [n=7,404]) had a mean delivered calculated, single session (hereafter referred to as delivered) hemodialysis dose of spKt/V ≥ 1.2.

B. ADEQUACY OF HEMODIALYSIS TABLES

Hemodialysis Adequacy Findings for October-December 2006

TABLE 7: *Mean delivered calculated, single session spKt/V and percent of adult in-center hemodialysis patients with mean delivered calculated, single session spKt/V ≥ 1.2 and ≥ 1.3 by characteristics, October-December 2006. 2007 ESRD CPM Project*

Patient Characteristics	Mean spKt/V	Percent of Patients with spKt/V ≥ 1.2	spKt/V ≥1.3
TOTAL	**1.55**	**90**	**83**
GENDER			
Male	1.48	87	78
Female	1.63	94	89
RACE			
American Indian/Alaska Native	1.65	93	89
Asian/Pacific Islander	1.68	97	92
Black or African American	1.51	89	81
White	1.56	91	84
Other/Unknown	1.53	91	86
ETHNICITY			
Hispanic	1.61	93	89
Non-Hispanic	1.54	90	82
AGE GROUP (years)			
18 - 44	1.51	87	78
45 - 54	1.50	88	79
55 - 64	1.54	90	83
65 - 74	1.57	93	85
75+	1.59	93	87
CAUSE of ESRD			
Diabetes Mellitus	1.54	90	82
Hypertension	1.55	91	84
Glomerulonephritis	1.55	91	84
Other/Unknown	1.56	91	83
DURATION OF DIALYSIS (years)			
< 0.5	1.39	73	60
0.5 - 0.9	1.49	86	76
1.0 - 1.9	1.55	91	83
2.0 - 2.9	1.57	94	88
3.0 - 3.9	1.58	94	89
4.0 +	1.61	95	90
QUINTILE POST-DIALYSIS BODY WEIGHT (kg)			
32.0 - 60.1	1.72	97	95
60.2 - 69.6	1.60	95	89
69.7 - 79.4	1.54	91	85
79.5 - 92.9	1.49	88	79
93.0 - 226.0	1.39	80	67
ACCESS TYPE			
AV Fistula	1.57	93	86
AV Graft*	1.62	96	92
Catheter	1.45	82	70
MEAN HGB (g/dL)			
≥ 11	1.56	92	85
< 11	1.49	83	74
MEAN SERUM ALBUMIN (g/dL)			
≥ 3.5/3.2 BCG/BCP^	1.56	91	85
< 3.5/3.2 BCG/BCP^	1.50	86	77

*Includes grafts with and without AVF.

^BCG/BCP = bromcresol green/bromcresol purple laboratory methods

Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

Table 8: *Percent of adult in-center hemodialysis patients receiving dialysis with a mean delivered, single session spKt/V ≥ 1.2, by gender, race, ethnicity, body weight, dialysis session length and Network, October-December 2006. 2007 ESRD CPM Project*

PATIENT CHARACTERISTIC	NETWORK																		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**U.S.**
ALL	**95**	**91**	**92**	**91**	**89**	**91**	**88**	**91**	**91**	**89**	**89**	**91**	**88**	**95**	**91**	**89**	**87**	**87**	**90**
GENDER																			
Male	94	88	91	89	86	87	86	88	89	85	86	88	84	93	88	86	83	83	**87**
Female	97	95	93	95	95	94	92	94	94	94	93	95	91	97	95	95	92	93	**94**
RACE																			
Black or African American	93	89	92	91	90	91	88	89	89	85	88	91	88	93	89	83	83	82	**89**
White	95	92	91	91	87	91	88	93	93	91	89	91	86	96	91	89	84	87	**91**
ETHNICITY																			
Hispanic	96	94	95	88	94	*	88	*	*	100	92	86	*	96	93	98	88	91	**93**
Non-Hispanic	95	91	90	91	89	91	88	91	91	87	89	92	88	94	90	88	86	84	**90**
POST-DIALYSIS BODY WEIGHT (kg)^																			
< 74.83	99	97	96	96	95	94	92	96	98	97	92	95	96	98	96	94	94	92	**95**
≥ 74.83	90	84	87	87	84	88	84	87	86	79	87	88	80	92	86	84	76	79	**86**
DIALYSIS SESSION LENGTH																			
< 212.67	94	92	90	88	91	90	85	89	91	87	88	90	83	94	88	80	84	86	**89**
≥ 212.67	97	91	93	93	87	92	91	92	92	90	91	93	92	95	94	94	93	91	**92**

* Value suppressed because n < 11
^ Post-dialysis body weight (kg) and dialysis session length categories were created at the median value for the study period
Note: A delivered spKt/V of 1.2 does not necessarily correlate with a delivered URR of 65%

C. VASCULAR ACCESS CPMs

CPM Findings for October-December 2006

Data to assess three vascular access CPMs were collected in 2007. The time period from which these data were abstracted was October–December 2006. Results for these CPMs are included in this report.

Vascular Access CPM I — A primary arteriovenous fistula (AVF) should be the access for at least 50% of all new patients initiating hemodialysis. A native AVF should be the primary access for 40% of all prevalent patients undergoing hemodialysis.

FINDING: 41% of incident patients (initiating their most recent course of hemodialysis, on or between January 1, 2006 and August 31, 2006, [n = 1,302]) were dialyzed using an AVF on their last hemodialysis session during October–December 2006 (TABLE 9).

45% of all patients in the sample for analysis were dialyzed using an AVF during their last hemodialysis session October–December 2006 (TABLE 9).

Vascular Access CPM II — Less than 10% of chronic maintenance hemodialysis patients should be maintained on catheters (continuously for 90 days or longer) as their permanent chronic dialysis access.

FINDING: 22% of all patients in the sample for analysis were dialyzed with a chronic catheter continuously for 90 days or longer during October–December 2006.

Vascular Access CPM III — A patient's AV graft should be routinely monitored for stenosis. (See Vascular Access CPM III in Appendix 1 for a list of techniques and frequency of monitoring used to screen for the presence of stenosis).

FINDING: 70% of patients with an AV graft (n=2,170) had this graft routinely monitored for the presence of stenosis during October–December 2006.

D. VASCULAR ACCESS TABLES

Vascular Access Findings for Oct-Dec 2006

TABLE 9: Vascular access type for incident^ and all adult in-center hemodialysis patients during the last hemodialysis session of the study period, by selected patient characteristics, October-December 2006. 2007 ESRD CPM Project.

	Incident (n = 1302)			Prevalent (n = 8740)		
Patient Characteristic	**AVF %**	**AV Graft %**	**Cath %**	**AVF^^ %**	**AV Graft %**	**Cath %**
TOTAL	**41**	**13**	**45**	**45**	**26**	**29**
GENDER						
Male	49	12	39	53	22	25
Female	31	15	53	35	32	38
RACE						
American Indian/ Alaska Native	*	*	*	59	24	17
Asian/Pacific Islander	53	*	29	56	24	20
Black or African American	34	16	50	40	23	28
White	44	12	44	48	22	30
Other/Unknown	*	*	*	*	*	*
ETHNICITY						
Hispanic	44	17	40	52	26	22
Non-Hispanic	41	13	46	44	26	30
AGE GROUP (years)						
18 - 44	46	*	45	52	20	27
45 - 54	46	15	38	48	27	25
55 - 64	39	11	50	44	27	29
65 - 74	42	14	44	43	29	28
75+	37	17	47	41	26	33
CAUSE of ESRD						
Diabetes Mellitus	41	15	44	43	28	29
Hypertension	39	16	45	45	28	27
Glomerulonephritis	50	*	44	54	24	22
Other/Unknown	41	8	51	45	20	34
DURATION OF DIALYSIS (years)						
< 0.5	33	10	57	23	8	69
0.5 - 0.9	44	14	41	44	14	41
1.0 - 1.9	N/A	N/A	N/A	49	25	26
2.0 - 2.9	N/A	N/A	N/A	53	27	19
3.0 - 3.9	N/A	N/A	N/A	51	32	17
4.0 +	N/A	N/A	N/A	46	36	18

^An incident patient is defined as a patient initiating in-center hemodialysis on or between January 1, 2006 and August 31, 2006.
^^CMS has set a goal to have ≥ 66% of prevalent hemodialysis patients using an AV Fistula as their access by the year 2010.
Note: Percentages may not add up to 100% due to rounding.
*Value suppressed because n < 11.

Table 10: *Percent of all adult in-center hemodialysis patients with an AV fistula access^ on their last hemodialysis session during October-December 2006, by gender, race, ethnicity, age, cause of ESRD, and Network. 2007 ESRD CPM Project*

PATIENT CHARACTERISTIC	NETWORK																		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**U.S.**
ALL	**57**	**47**	**44**	**43**	**38**	**41**	**44**	**42**	**44**	**42**	**40**	**45**	**36**	**42**	**55**	**61**	**53**	**51**	**45**
GENDER																			
Male	64	55	53	51	44	50	53	53	53	52	45	51	46	51	63	66	62	59	**53**
Female	47	37	33	33	32	32	31	28	32	25	36	38	25	34	45	55	40	39	**35**
RACE																			
Black or African American	48	41	40	41	37	40	44	41	40	38	35	41	34	38	39	57	47	42	**40**
White	59	50	48	46	39	44	44	44	45	44	41	46	38	45	55	60	58	51	**48**
ETHNICITY																			
Hispanic	57	62	44	61	*	*	49	*	*	45	*	52	*	47	53	70	57	54	**52**
Non-Hispanic	57	44	45	43	38	41	44	42	43	41	41	45	36	39	56	61	52	48	**44**
AGE GROUP (years)																			
18 - 44	67	60	40	48	53	52	57	52	53	41	44	55	43	48	59	71	52	58	**52**
45 - 54	53	47	57	44	38	45	50	38	47	47	45	47	42	52	54	68	57	51	**48**
55 - 64	60	42	34	48	34	46	42	44	44	47	35	50	45	38	57	61	52	50	**44**
65 - 74	52	52	43	44	43	36	39	38	43	41	34	39	31	40	56	52	49	47	**43**
75+	56	41	51	37	30	27	38	35	38	31	46	40	21	35	51	60	56	50	**41**
CAUSE OF ESRD																			
Diabetes Mellitus	50	49	41	38	33	38	38	40	44	40	39	43	34	42	57	61	50	48	**43**
Other Causes Combined	61	46	47	47	43	43	48	43	44	42	42	46	38	43	53	62	55	53	**47**

* Value suppressed because n < 11

^ CMS has set a goal to have ≥ 66% of prevalent hemodialysis patients using an AV Fistula as their access by the year 2010.

Table 11: *Percent of all adult in-center hemodialysis patients with a catheter access on their last hemodialysis session during October-December 2006, by gender, race, ethnicity, age, cause of ESRD, and Network. 2007 ESRD CPM Project*

PATIENT CHARACTERISTIC	NETWORK																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	U.S.
ALL	**27**	**27**	**35**	**32**	**30**	**26**	**33**	**25**	**32**	**33**	**35**	**32**	**36**	**24**	**30**	**22**	**23**	**20**	**29**
GENDER																			
Male	24	23	29	31	28	21	30	23	26	29	33	28	32	20	25	20	18	17	**25**
Female	32	33	43	33	32	31	39	28	40	40	38	36	41	28	37	25	30	25	**33**
RACE																			
Black or African American	31	28	34	27	27	23	29	23	31	36	26	34	32	28	40	*	31	19	**28**
White	26	29	35	34	34	34	37	29	33	32	41	31	43	22	31	23	22	21	**30**
ETHNICITY																			
Hispanic	*	21	31	*	*	*	31	*	*	34	*	*	*	18	28	*	18	19	**22**
Non-Hispanic	28	29	37	32	30	26	34	25	33	33	35	33	36	28	30	22	24	22	**30**
AGE GROUP (years)																			
18 - 44	28	25	44	28	27	25	26	20	28	39	30	29	33	26	29	18	28	22	**27**
45 - 54	23	24	30	34	27	17	29	31	34	25	30	27	28	16	29	19	17	22	**25**
55 - 64	24	30	37	25	34	26	37	22	34	27	38	26	33	25	26	19	25	21	**27**
65 - 74	27	20	30	31	23	24	33	26	28	36	38	36	34	28	30	29	24	23	**28**
75+	31	34	34	38	37	39	38	29	35	41	36	39	50	24	33	22	21	15	**33**
CAUSE OF ESRD																			
Diabetes Mellitus	31	25	36	33	32	25	38	24	32	34	36	35	37	23	25	24	23	20	**29**
Other Causes Combined	25	29	34	31	28	27	30	26	32	33	34	30	35	26	34	21	23	21	**29**

* Value suppressed because n < 11

Table 12: *Reasons for catheter placement in adult in-center hemodialysis patients using catheters on their last hemodialysis session during October-December 2006 compared to previous study periods. 2007 ESRD CPM Project.*

	2002	2003	2004	2005	2006
No fistula or graft surgically planned	22%	24%	27%	19%	29%
Fistula or graft maturing, not ready to cannulate	27%	23%	26%	25%	30%
Temporary interruption of fistula or graft due to clotting or revisions	14%	12%	11%	10%	12%
No fistula or graft surgically created at this time	18%	22%	21%	19%	34%
All fistula or graft sites have been exhausted	12%	13%	11%	18%	19%

E. ANEMIA MANAGEMENT CPMs

CPM Findings for October–December 2006

Data were collected to assess three anemia management CPMs. The time period from which these data were abstracted was October–December 2006.

Anemia Management CPM I — The target hemoglobin is 11–12 g/dL (110-120 g/L). Patients with a mean hemoglobin > 12 g/dL (120 g/L) and not prescribed epoetin were excluded from analysis for this CPM.

FINDING: For the last quarter of 2006, 33% of the in-center hemodialysis patients who met the inclusion criteria (n=8,110) had a mean hemoglobin 11–12 g/dL (110-120 g/L).

Anemia Management CPM IIa — For all anemic patients (hemoglobin < 11 g/dL [110 g/L]) or patients prescribed epoetin, the percent transferrin saturation and the serum ferritin concentration are assessed (measured) at least once in a three-month period.

FINDING: For the last quarter of 2006, 97% of the in-center hemodialysis patients who met the inclusion criteria (n=7,993) had at least one documented (measured) transferrin saturation value and at least one documented (measured) serum ferritin concentration value during the study period.

Anemia Management CPM IIb — For all anemic patients (hemoglobin < 11 g/dL [110 g/L]) or patients prescribed epoetin, at least one serum ferritin concentration ≥100 ng/mL and at least one transferrin saturation ≥ 20% were documented during the three-month study period.

FINDING: For the last quarter of 2006, 82% of the in-center hemodialysis patients who met the inclusion criteria (n=7,993) had at least one documented transferrin saturation ≥ 20% and at least one documented serum ferritin concentration ≥ 100 ng/mL during the study period.

Anemia Management CPM III — All anemic patients (hemoglobin < 11 g/dL [110 g/L]), or patients prescribed epoetin, and with at least one transferrin saturation < 20% or at least one serum ferritin concentration < 100 ng/mL during the study period are prescribed intravenous iron; UNLESS the mean transferrin saturation was ≥ 50% or the mean serum ferritin concentration was ≥ 800 ng/mL; UNLESS the patient was in the first three months of dialysis and was prescribed a trial dose of oral iron.

FINDING: 83% of the in-center hemodialysis patients who met the inclusion criteria (n=2,874) were prescribed intravenous iron in at least one month during October–December 2006.

F. ANEMIA MANAGEMENT TABLES

Anemia Management Findings for October-December 2006

TABLE 13: *Mean hemoglobin values (g/dL) for adult in-center hemodialysis patients in the U.S., by patient characteristics, October-December 2006. 2007 ESRD CPM Project*

Patient Characteristics	Mean Hgb (g/dL)	Percent of Patients with hemoglobin values					
		<10	10-10.9	11-11.9	12-12.9	13-13.9	14+
ALL	**12.0**	**5**	**11**	**30**	**35**	**14**	**5**
GENDER							
Male	12.1	5	11	30	34	14	6
Female	12.0	5	12	31	35	13	4
RACE							
American Indian/ Alaska Native	12.2	*	*	30	35	14	*
Asian/Pacific Islander	12.1	*	10	33	35	15	5
Black or African American	12.0	6	11	30	34	14	6
White	12.0	4	12	31	36	13	5
Other/Unknown	11.9	*	*	*	*	*	*
ETHNICITY							
Hispanic	12.1	3	11	29	35	15	5
Non-Hispanic	12.0	5	11	31	35	13	5
AGE GROUP (years)							
18 - 44	12.0	7	12	29	32	14	6
45 - 54	12.0	6	12	30	32	15	5
55 - 64	12.0	5	12	30	35	13	6
65 - 74	12.0	5	12	30	36	14	4
75+	12.1	4	10	32	36	13	5
CAUSE of ESRD							
Diabetes Mellitus	12.0	5	12	31	34	14	5
Hypertension	12.1	4	11	31	36	14	5
Glomerulonephritis	12.1	5	10	30	37	13	6
Other/Unknown	12.0	7	12	29	34	13	5
DURATION OF DIALYSIS (years)							
< 0.5	11.6	15	21	26	23	11	6
0.5 - 0.9	12.3	4	8	25	35	20	8
1.0 - 1.9	12.1	4	10	32	36	14	5
2.0 - 2.9	12.0	4	9	34	38	13	3
3.0 - 3.9	12.1	3	9	33	39	13	4
4.0 +	12.1	4	12	31	36	13	5
MEAN spKt/V							
≥ 1.2	12.1	4	11	31	36	14	5
< 1.2	11.7	12	17	28	27	12	5
MEAN SERUM ALBUMIN (g/dL)							
≥ 3.5/3.2 BCG/BCP^	12.2	3	9	31	37	15	6
< 3.5/3.2 BCG/BCP^	11.5	14	20	30	25	9	3
ACCESS TYPE							
AV Fistula	12.2	3	9	32	37	14	5
AV Graft**	12.1	4	10	31	37	13	5
Catheter	11.8	10	17	27	30	12	5

*Value suppressed because n < 11
**Includes grafts with and without AVF.
^BCG/BCP = bromcresol green/bromcresol purple laboratory methods.
Note: Percentages may not add up to 100% due to rounding.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

Table 14: *Percent of all adult in-center hemodialysis patients with mean hemoglobin ≥ 11 g/dL, by gender, race, ethnicity, age, access type, mean serum albumin, and Network, October-December 2006. 2007 ESRD CPM Project*

PATIENT CHARACTERISTIC	NETWORK																		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**U.S.**
ALL	**83**	**84**	**83**	**82**	**82**	**84**	**82**	**79**	**83**	**81**	**85**	**81**	**83**	**86**	**86**	**87**	**85**	**85**	**84**
GENDER																			
Male	85	85	81	81	79	85	83	79	84	82	84	79	85	88	89	86	87	84	**84**
Female	81	82	84	83	86	84	80	79	82	81	85	85	80	83	84	88	84	87	**83**
RACE																			
Black or African American	87	81	82	80	82	86	82	78	83	78	84	80	83	87	93	79	81	87	**83**
White	81	85	83	83	82	81	82	81	84	84	84	83	83	85	86	88	89	85	**84**
ETHNICITY																			
Hispanic	76	89	84	78	94	*	88	*	*	79	*	91	*	86	87	81	87	84	**85**
Non-Hispanic	84	83	82	82	82	84	81	79	83	81	85	81	83	85	86	87	85	86	**83**
AGE GROUP (years)																			
18 - 44	75	78	81	77	86	82	78	76	81	74	75	82	75	86	87	86	86	86	**81**
45 - 54	84	78	76	71	76	84	83	74	82	76	82	80	82	88	88	83	87	82	**82**
55 - 64	88	82	84	82	85	85	82	79	84	85	80	82	88	88	82	89	81	86	**84**
65 - 74	78	90	81	85	86	86	77	79	86	83	82	79	86	83	88	81	85	83	**84**
75+	86	86	89	86	79	85	88	88	82	84	93	84	80	82	89	92	90	90	**86**
ACCESS TYPE																			
AV Fistula	86	89	87	91	88	87	87	84	90	86	89	87	90	90	91	87	89	87	**88**
AV Graft**	86	85	89	82	86	86	84	83	80	88	90	78	87	91	85	91	83	88	**86**
Catheter	75	73	73	69	70	78	74	65	77	70	75	76	73	69	78	81	80	79	**74**
MEAN SERUM ALBUMIN (g/dL)																			
≥ 3.5/3.2 BCG/BCP^	88	87	88	86	87	88	87	82	88	84	91	84	86	91	89	90	89	89	**88**
< 3.5/3.2 BCG/BCP^	65	72	62	61	59	69	61	62	68	61	67	72	70	62	70	73	71	66	**66**

* Value suppressed because n < 11

**Includes grafts with and without AVF

^BCG/BCP = bromcresol green/bromcresol purple laboratory methods.

Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

Table 15: *Regional variation for various anemia management measures for adult in-center hemodialysis patients including the percent of patients with mean hemoglobin ≥ 11 g/dL, mean hemoglobin (g/dL), and mean serum albumin ≥ 4.0 (BCG)^ for these patients nationally and by Network, October-December 2006. 2007 ESRD CPM Project.*

Patient Characteristic	Network																		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**U.S.**
% patients with mean hemoglobin ≥ 11 g/dL	**83**	**84**	**83**	**82**	**82**	**84**	**82**	**79**	**83**	**81**	**85**	**81**	**83**	**86**	**86**	**87**	**85**	**85**	**84**
Mean hemoglobin (g/dL)	**11.9**	**12.0**	**12.0**	**11.9**	**12.0**	**12.1**	**12.1**	**11.9**	**12.0**	**12.0**	**12.0**	**11.9**	**12.0**	**12.1**	**12.2**	**12.1**	**12.1**	**12.1**	**12.0**
% patients with mean serum albumin ≥ 4.0 g/dL (BCG)^	**31**	**35**	**30**	**30**	**36**	**34**	**35**	**31**	**29**	**37**	**28**	**27**	**31**	**34**	**35**	**35**	**40**	**40**	**34**
Average transferrin saturation (TSAT) (%)	29	29	28	27	29	28	29	27	27	27	28	27	29	29	28	26	28	29	**28**
% patients with mean TSAT ≥ 20%	80	79	76	78	82	80	82	79	78	78	79	73	81	82	77	74	78	79	**79**
Average serum ferritin concentration (ng/mL)	572	570	596	586	579	586	596	565	586	586	566	556	623	600	544	504	571	631	**583**
% patients with mean serum ferritin concentration ≥ 100 ng/mL	95	91	95	94	94	93	93	95	95	96	96	96	96	97	93	93	94	96	**95**
% patients with mean serum ferritin concentration > 800 ng/mL	20	22	24	22	25	23	26	19	24	20	21	20	27	24	18	14	21	29	**23**
% of all patients with IV iron prescribed	68	65	71	71	63	69	69	72	72	75	72	72	73	72	65	72	64	68	**70**
% of patients prescribed ESA^^	94	94	95	95	93	94	92	94	92	95	89	92	93	95	90	95	95	95	**94**
% of patients with mean hemoglobin < 11 g/dL with ESA prescribed	95	91	94	92	94	89	91	93	90	93	91	88	93	96	95	92	94	92	**94**

^ For subset of patients with serum albumin tested by the bromcresol green (BCG) laboratory method
^^ ESA – Erythropoetin Stimulating Agents
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

G. SERUM ALBUMIN TABLE

Serum Albumin Findings for October-December 2006

TABLE 16: *Percent of adult in-center hemodialysis patients with mean serum albumin values ≥ 4.0/3.7 g/dL (BCG/BCP)* and ≥ 3.5/3.2 g/dL (BCG/BCP) in the U.S., by patient characteristics, October-December 2006. 2007 ESRD CPM Project.*

Patient Characteristics	Percent of Patients with Mean Serum Albumin ≥ 4.0/3.7 g/dL	≥ 3.5/3.2 g/dL
TOTAL	**34**	**81**
GENDER		
Male	39	83
Female	28	78
RACE		
American Indian/Alaska Native	21	74
Asian/Pacific Islander	41	86
Black or African American	37	83
White	31	79
Other/Unknown	44	83
ETHNICITY		
Hispanic	38	83
Non-Hispanic	33	80
AGE GROUP (years)		
18 - 44	49	86
45 - 54	41	86
55 - 64	33	81
65 - 74	29	79
75+	23	76
CAUSE of ESRD		
Diabetes Mellitus	27	78
Hypertension	39	85
Glomerulonephritis	46	88
Other/Unknown	34	78
DURATION OF DIALYSIS (years)		
< 0.5	17	60
0.5 - 0.9	27	78
1.0 - 1.9	33	82
2.0 - 2.9	38	85
3.0 - 3.9	38	85
4.0 +	40	86
MEAN spKt/V		
≥ 1.2	35	82
< 1.2	29	72
MEAN HGB (g/dL)		
≥ 11	37	85
< 11	18	61
ACCESS TYPE		
AV Fistula	41	87
AV Graft**	36	85
Catheter	20	67

*BCG/BCP = bromcresol green/bromcresol purple laboratory methods
**Includes grafts with and without AVF
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

VI. ADULT PERITONEAL DIALYSIS PATIENTS

This section describes the findings for adult peritoneal dialysis patients for selected CPMs and other quality indicators related to adequacy of peritoneal dialysis, anemia management, and serum albumin.

A national random sample of adult (≥ 18 years) peritoneal dialysis patients who were alive on December 31, 2006, was selected (sample size=1,474). 1,433 patients (97.2%) were included in the sample for analysis.

A. ADEQUACY OF PERITONEAL DIALYSIS CPMs

CPM Findings for October 2006–March 2007

Data to assess three peritoneal dialysis adequacy CPMs were collected in 2007. The time period from which these data were abstracted was October 2006–March 2007. Tidal peritoneal dialysis patients (n=52) were excluded from the peritoneal dialysis adequacy CPM calculations.

Peritoneal Dialysis Adequacy CPM I — The patient's total solute clearance for urea and creatinine is measured routinely (defined for this report as at least once during the six-month study period).

FINDING: 84% of adult peritoneal dialysis patients had both a weekly Kt/V_{urea} and a weekly creatinine clearance measurement reported at least once during the six-month study period (FIGURE 2).

Peritoneal Dialysis Adequacy CPM II — The patient's total solute clearance for urea (weekly Kt/V_{urea}) and creatinine (weekly creatinine clearance) is calculated in a standard way. (See Peritoneal Dialysis Adequacy CPM II in Appendix 1).

FINDING: 49% of adult peritoneal dialysis patients who had reported adequacy measurements documented in their charts at least once during the six-month study period had these reported measurements (Kt/V_{urea} and creatinine clearance) calculated in a standard way as described in Peritoneal Dialysis Adequacy CPM II in Appendix 1 (FIGURE 2).

Peritoneal Dialysis Adequacy CPM III — For patients on CAPD, the delivered peritoneal dialysis dose is a weekly Kt/V_{urea} of at least 2.0 and a weekly creatinine clearance of at least 60 L/week/1.73 m^2 OR there was evidence the dialysis prescription was changed if the adequacy measurements were below these thresholds during the six-month study period.

For CCPD patients (cycler patients with a daytime dwell), the delivered peritoneal dialysis dose is a weekly Kt/V_{urea} of at least 2.1 and a weekly creatinine clearance of at least 63 L/week/1.73 m^2 OR there was evidence the dialysis prescription was changed if the adequacy measurements were below these thresholds during the six-month study period.

For NIPD patients (cycler patients without a daytime dwell), the delivered peritoneal dialysis dose is a weekly Kt/V_{urea} of at least 2.2 and a weekly creatinine clearance of at least 66 L/week/1.73 m^2 OR there was evidence the dialysis prescription was changed if the adequacy measurements were below these thresholds during the six-month study period.

For the October 2006-March 2007 Study period, CCPD patients and NIPD patients were not distinguishable. For Cycler patients, the delivered peritoneal dialysis dose is a weekly Kt/V_{urea} of at least 2.1 and a weekly creatinine clearance of at least 63 L/week/1.73m^2.

FINDING: 75% of CAPD patients had a mean weekly Kt/V_{urea} ≥ 2.0 and a mean weekly creatinine clearance ≥ 60 L/week/1.73 m^2 OR there was evidence the dialysis prescription was changed if the adequacy measurements were below these thresholds during the six-month study period (FIGURE 3).

ALTERNATE FINDING: 85% (97/114) of CAPD patients with a Peritoneal Equilibration Test (PET) result within 12 months of or during the study period met the revised 2000 NKF-K/DOQI thresholds for peritoneal dialysis adequacy (3) (a mean weekly Kt/V_{urea} ≥ 2.0 and for high and high-average transporters, a weekly creatinine clearance ≥ 60 L/week/1.73m^2, for low and low-average transporters, a weekly creatinine clearance ≥ 50 L/week/1.73m^2, OR there was evidence the dialysis prescription was changed if the adequacy measurements were below these thresholds during the six-month study period).

FINDING: 64% of cycler patients had a mean weekly Kt/V_{urea} ≥ 2.1 and a mean weekly creatinine clearance ≥ 63 L/week/1.73 m^2 OR there was evidence the dialysis prescription was changed if the adequacy measurements were below these thresholds during the six-month study period (FIGURE 3).

B. ADEQUACY OF PERITONEAL DIALYSIS TABLES

Peritoneal Dialysis Adequacy Findings for October 2006-March 2007

TABLE 17: *Percent of adult CAPD patients with mean ± SD weekly adequacy values meeting 2000 NKF-K/DOQI guidelines and median adequacy values, by transporter type (4 hr. D/P Cr Ratio)*, October 2006–March 2007. 2007 ESRD CPM Project.*

	Oct 2000-Mar 2001		Oct 2002-Mar 2003		Oct 2004-Mar 2005		Oct 2005-Mar 2006		Oct 2006-Mar 2007	
Adequacy Measure	**High-Avg/ High**	**Low/ Low-Avg**	**High-Avg/ High**	**Low/ Low-Avg**	**High-Avg/ High**	**Low/ Low-Avg**	**High-Avg/ High**	**Low/ Low-Avg**	**High-Avg/ High**	**Low/ Low-Avg**
Weekly Kt/V_{urea}										
% meeting 1997 NKF-K/DOQI^	75%	71%	74%	81%	68%	62%	62%	71%	64%	69%
% meeting 2006 KDOQI^^									88%	90%
mean ± SD	2.35 ± 0.57	2.35 ± 0.58	2.36 ± 0.59	2.37 ± 0.48	2.41 ± 0.70	2.28 ± 0.77	2.29 ± 0.55	2.26 ± 0.60	2.29 ± 0.67	2.38 ± 0.70
median	2.26	2.32	2.26	2.40	2.36	2.10	2.27	2.25	2.17	2.31
Weekly Creatinine Clearance (L/week/1.73m²)										
% meeting 1997 NKF-K/DOQI	76%	79%	66%	79%	73%	61%	70%	72%	69%	80%
mean ± SD	82.6 ± 29.7	73.0 ± 27.5	80.1 ± 30.0	72.9 ± 26.6	81.0 ± 27.6	75.4 ± 32.2	81.1 ± 30.9	77.1 ± 26.9	77.4 ± 28.4	79.8 ± 31.2
median	78.6	68.5	72.8	69.6	76.4	67.8	69.1	78.4	67.2	73.0

* Transporter type (4 hr. D/P Cr Ratio): Low = 0.34-0.49; Low-Average = 0.50-0.64; High-Average = 0.65-0.81; High = 0.82-1.03
^ For CAPD patients, the delivered PD dose was a weekly Kt/V_{urea} ≥ 2.0 and a weekly creatinine clearance ≥ 60 L/week/1.73m² for high-average and high transporters, and ≥ 50 L/week/1.73m² for low and low-average transporters.
^^ Using the 2006 KDOQI guidelines and recommendations (29): For peritoneal dialysis patients with and without renal kidney function: weekly KtV_{urea} ≥ 1.7

TABLE 18: *Percent of adult cycler patients with mean ± SD weekly adequacy values meeting 2000 NKF-K/DOQI guidelines and median adequacy values, October 2006 - March 2007. 2007 ESRD CPM Project.*

	Oct 2000-Mar 2001		Oct 2002-Mar 2003		Oct 2004-Mar 2005		Oct 2005-Mar 2006	Oct 2006-Mar 2007
Adequacy Measure	**w/daytime dwell**	**no daytime dwell**	**w/daytime dwell**	**no daytime dwell**	**w/daytime dwell**	**no daytime dwell**	**Cycler^^**	**Cycler^^**
Weekly Kt/V_{urea}								
% meeting 1997 NKF-K/DOQI^	64%	53%	64%	58%	57%	60%	57%	55%
% meeting 2006 KDOQI^^^								83%
mean ± SD	2.33 ± 0.55	2.33 ± 0.73	2.31 ± 0.54	2.53 ± 0.80	2.23 ± 0.61	2.37 ± 0.77	2.26 ± 0.62	2.22 ± 0.64
median	2.24	2.22	2.25	2.38	2.19	2.34	2.17	2.17
Weekly Creatinine Clearance (L/week/1.73m²)								
% meeting 1997 NKF-K/DOQI	55%	61%	49%	56%	49%	50%	48%	47%
mean ± SD	71.9 ± 25.6	77.6 ± 31.0	66.5 ± 22.2	74.3 ± 33.0	66.8 ± 23.2	72.4 ± 29.9	66.7 ± 24.5	68.4 ± 27.8
median	65.7	75.3	62.3	70.2	62.4	66.4	61.9	60.7

^For cycler patients with daytime dwell (CCPD patients): Kt/V_{urea} ≥ 2.1; creatinine clearance ≥ 63 L/week/1.73m²;
For nighttime cycler patients (no daytime dwell) (NIPD patients): Kt/V_{urea} ≥ 2.2; creatinine clearance ≥ 66 L/week/1.73m²
^^ For Oct 2005-Mar 2006 and Oct 2006-Mar 2007 CCPD and NIPD modalities were not distinguishable; For Cycler patients: Kt/V_{urea} ≥ 2.1; creatinine clearance ≥ 63 L week/1.73m²
^^^ Using the 2006 KDOQI guidelines and recommendations (29): For peritoneal dialysis patients with and without renal kidney function: weekly KtV_{urea} ≥ 1.7

C. ANEMIA MANAGEMENT CPMs

CPM Findings for October 2006–March 2007

Data to assess three anemia management CPMs were collected in 2007. The time period from which these data were abstracted was October 2006–March 2007.

Anemia Management CPM I — The target hemoglobin is 11–12 g/dL (110-120 g/L). Patients with a mean hemoglobin > 12 g/dL (120 g/L) and not prescribed epoetin were excluded from analysis for this CPM.

FINDING: For the six-month study period, 37% of the peritoneal dialysis patients who met the inclusion criteria (n=1,266) had a mean hemoglobin 11–12 g/dL (110-120 g/L) during October 2006—March 2007.

Anemia Management CPM IIa — For all anemic patients (hemoglobin < 11 g/dL [110 g/L]) or patients prescribed epoetin, the percent transferrin saturation and serum ferritin concentration are assessed (measured) at least two times during the six-month study period.

FINDING: 74% of the peritoneal dialysis patients who met the inclusion criteria (n=1,246) had at least two documented (measured) transferrin saturation values and at least two documented (measured) serum ferritin concentration values during October 2006–March 2007.

Anemia Management CPM IIb — For all anemic patients (hemoglobin < 11 g/dL [110 g/L]) or patients prescribed epoetin, at least one serum ferritin concentration ≥ 100 ng/mL and at least one transferrin saturation ≥ 20% were documented during the six-month study period.

FINDING: 85% of the adult peritoneal dialysis patients who met the inclusion criteria (n=1,246) had at least one documented transferrin saturation ≥ 20% and at least one documented serum ferritin concentration ≥ 100 ng/mL during October 2006–March 2007.

Anemia Management CPM III — All anemic patients (hemoglobin < 11 g/dL [110 g/L]) or patients prescribed epoetin, with at least one transferrin saturation < 20% or at least one serum ferritin concentration < 100 ng/mL during the study period are prescribed intravenous iron; UNLESS the mean transferrin saturation was ≥ 50% or the mean serum ferritin concentration was ≥ 800 ng/ml; UNLESS the patient was in the first three months of dialysis and was prescribed a trial dose of oral iron.

FINDING: 41% of the peritoneal dialysis patients who met the inclusion criteria (n=493) were prescribed intravenous iron at least once during October 2006–March 2007.

D. ANEMIA MANAGEMENT TABLES

Anemia Management Findings for October 2006–March 2007

TABLE 19: *Mean hemoglobin values (g/dL) for adult peritoneal dialysis patients, by patient characteristics, October 2006-March 2007. 2007 ESRD CPM Project.*

Patient Characteristics	Mean Hgb (g/dL)	Percent of Patients with hemoglobin values					
		<10	10-10.9	11-11.9	12-12.9	13-13.9	14+
TOTAL	**12.0**	**6**	**12**	**31**	**32**	**13**	**6**
GENDER							
Male	12.1	5	11	29	34	15	7
Female	11.9	7	14	33	30	12	4
RACE							
American Indian/ Alaska Native	11.8	*	*	*	*	*	*
Asian/Pacific Islander	12.0	*	13	33	33	15	*
Black or African American	11.8	10	13	35	24	13	4
White	12.1	4	12	29	35	13	7
Other/Unknown	*	*	*	*	*	*	*
ETHNICITY							
Hispanic	12.1	*	10	28	37	14	6
Non-Hispanic	12.0	6	13	31	31	13	6
AGE GROUP (years)							
18 - 44	11.7	11	15	27	30	10	6
45 - 54	12.0	6	15	28	31	12	7
55 - 64	12.2	3	10	34	30	17	5
65 - 74	12.0	*	11	34	38	13	*
75+	12.3	*	9	33	33	14	9
CAUSE of ESRD							
Diabetes Mellitus	12.0	4	13	32	34	13	3
Hypertension	12.0	7	11	27	33	14	7
Glomerulonephritis	12.0	5	15	33	28	14	6
Other/Unknown	12.1	7	10	30	32	13	8
DURATION OF DIALYSIS (years)							
< 0.5	12.3	*	9	25	38	18	8
0.5 - 0.9	12.3	*	11	25	34	18	9
1.0 - 1.9	12.1	4	10	33	35	13	6
2.0 - 2.9	11.9	*	15	36	29	11	*
3.0 - 3.9	11.9	*	16	35	29	10	*
4.0 +	11.7	11	13	31	28	11	5
MEAN SERUM ALBUMIN (g/dL)							
≥ 3.5/3.2 BCG/BCP^	12.2	4	10	30	35	14	7
< 3.5/3.2 BCG/BCP^	11.8	8	16	32	27	12	5
MEAN WEEKLY CREATININE CLEARANCE							
≥ 60 L/week/1.73m^2	12.3	*	9	27	39	15	8
< 60 L/week/1.73m^2	12.0	6	12	33	32	10	7

Note: Percentages may not add up to 100% due to rounding.
^BCG/BCP = bromcresol green/bromcresol purple laboratory methods.
*Value suppressed because n < 11.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

E. SERUM ALBUMIN TABLE

Peritoneal Dialysis Serum Albumin Findings for October 2006-March 2007

TABLE 20: *Percent of adult peritoneal dialysis patients with mean serum albumin values ≥ 4.0/3.7 g/dL (BCG/BCP)^ and ≥ 3.5/3.2 g/dL (BCG/BCP) in the U.S., by patient characteristics, October 2006-March 2007. 2007 ESRD CPM Project.*

Patient Characteristics	Percent of Patients with Mean Serum Albumin ≥ 4.0/3.7 g/dL	≥ 3.5/3.2 g/dL
TOTAL	**19**	**63**
GENDER		
Male	22	64
Female	16	61
RACE		
American Indian/Alaska Native	*	*
Asian/Pacific Islander	32	69
Black or African American	20	62
White	17	62
Other/Unknown	*	*
ETHNICITY		
Hispanic	21	65
Non-Hispanic	19	62
AGE GROUP (years)		
18 - 44	31	73
45 - 54	24	70
55 - 64	18	62
65 - 74	8	49
75+	*	46
CAUSE of ESRD		
Diabetes Mellitus	9	51
Hypertension	26	68
Glomerulonephritis	28	76
Other/Unknown	21	64
DURATION OF DIALYSIS (years)		
< 0.5	21	62
0.5 - 0.9	22	67
1.0 - 1.9	21	62
2.0 - 2.9	15	63
3.0 - 3.9	22	63
4.0 +	17	61
MEAN HGB (g/dL)		
≥ 11	20	66
< 11	14	49
MEAN WEEKLY CREATININE CLEARANCE		
≥ 60 L/week/1.73m^2	23	67
< 60 L/week/1.73m^2	22	65
MODALITY		
CAPD	20	64
Cycler	20	65

^ BCG/BCP = bromcresol green/bromcresol purple laboratory methods.
* Value suppressed because n < 11.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

VII. PEDIATRIC IN-CENTER HEMODIALYSIS PATIENTS

All patients aged < 18 years identified as receiving in-center hemodialysis on December 31, 2006 were included in this study (n=720). 681 patients (95%) of this group met the case definition and were included in the sample for analysis. (See footnote to Table 5 on page 11 for case definition).

This section describes the findings for pediatric (aged < 18 years) in-center hemodialysis patients for core indicators related to urea clearance, vascular access, anemia management and serum albumin.

A. CLEARANCE TABLE

Findings for October-December 2006 (for patients < 18 years)

TABLE 21: *Mean delivered calculated, single session spKt/V for all pediatric (aged < 18 years) in-center hemodialysis patients and percent of patients with mean single session spKt/V ≥ 1.2, by patient characteristics, October-December 2006. 2007 ESRD CPM Project.*

Patient Characteristics	Mean spKt/V	% spKt/V ≥ 1.2
TOTAL	**1.62**	**91**
GENDER		
Male	1.57	89
Female	1.69	94
RACE		
American Indian/Alaska Native	1.73	87
Asian/Pacific Islander	1.66	88
Black or African American	1.59	89
White	1.64	92
Other/Unknown	*	*
ETHNICITY		
Hispanic	1.62	92
Non-Hispanic	1.62	90
AGE GROUP (years)		
0 - 4	1.69	92
5 - 9	1.76	95
10 - 14	1.67	96
15 to <18	1.56	87
DIALYSIS SESSION LENGTH (minutes)		
< 180	1.55	87
180 - 209	1.57	90
210 - 239	1.66	94
240+	1.72	94
DURATION OF DIALYSIS (years)		
< 0.5	1.47	74
0.5 - 0.9	1.58	92
1.0 - 1.9	1.63	95
2.0 - 2.9	1.67	96
3.0 - 3.9	1.74	95
4.0 +	1.69	95
QUINTILE POST DIALYSIS BODY WEIGHT (kg)		
4.7 - 29.2	1.73	95
29.3 - 38.9	1.78	100
39.0 - 48.8	1.66	95
48.9 - 61.7	1.57	93
61.8 - 141.9	1.41	73
ACCESS TYPE		
AV Fistula	1.62	94
AV Graft**	1.73	96
Catheter	1.61	89
MEAN HGB (g/dL)		
≥ 11	1.63	93
< 11	1.60	86
MEAN SERUM ALBUMIN (g/dL)		
≥ 3.5/3.2 BCG/BCP^	1.62	93
< 3.5/3.2 BCG/BCP^	1.65	83

*Value suppressed because n < 11.
**Includes grafts with and without AVF.
^BCG/BCP = bromcresol green/bromcresol purple laboratory methods.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by

B. VASCULAR ACCESS TABLE

Findings for October-December 2006 (for patients < 18 years)

TABLE 22: *Vascular access type for all pediatric (aged < 18 years) in-center hemodialysis patients on their last hemodialysis session during October-December 2006, by selected patient characteristics. 2007 ESRD CPM Project.*

Patient Characteristics	Percent of Patients with		
	AV Fistula	AV Graft**	Catheter
TOTAL	**31**	**8**	**60**
GENDER			
Male	33	9	58
Female	29	7	64
RACE			
American Indian/Alaska Native	*	*	*
Asian/Pacific Islander	*	*	*
Black or African American	32	12	56
White	30	6	64
Other/Unknown	*	*	*
ETHNICITY			
Hispanic	32	*	64
Non-Hispanic	31	10	59
AGE GROUP (years)			
< 12	13	*	84
12 to <18	37	10	53
DURATION OF DIALYSIS (years)			
< 0.5	12	*	86
0.5 - 0.9	31	*	67
1.0 - 1.9	43	8	49
2.0 - 2.9	31	*	61
3.0 - 3.9	28	*	61
4.0 +	38	15	47

NOTE: Percentages may not add up to 100% due to rounding.
*Value suppressed because n < 11.
**Includes grafts with and without AVF.

C. ANEMIA MANAGEMENT TABLE

Findings for October-December 2006 (for patients < 18 years)

TABLE 23: *Mean hemoglobin values (g/dL) and distribution of hemoglobin values for all pediatric (aged < 18 years) in-center hemodialysis patients, by patient characteristics, October-December 2006. 2007 ESRD CPM Project.*

Patient Characteristics	Mean Hgb (g/dL)	Percent of Patients with hemoglobin values						
		<9	9-9.9	10-10.9	11-11.9	12-12.9	13-13.9	14+
ALL	**11.5**	**8**	**9**	**15**	**26**	**25**	**13**	**4**
GENDER								
Male	11.6	8	7	15	26	26	13	4
Female	11.4	9	12	14	27	23	13	*
RACE								
American Indian/ Alaska Native	11.8	*	*	*	*	*	*	*
Asian/Pacific Islander	12.3	*	*	*	*	*	*	*
Black or African American	11.3	11	11	17	24	21	13	*
White	11.6	7	8	14	28	27	12	3
Other/Unknown	*	*	*	*	*	*	*	*
ETHNICITY								
Hispanic	11.6	7	9	14	28	28	12	*
Non-Hispanic	11.5	9	9	15	25	24	14	4
AGE GROUP (years)								
0 - 4	10.9	*	*	*	*	*	*	*
5 - 9	10.9	17	*	*	29	*	*	*
10 - 14	11.5	8	10	17	26	26	11	*
15 to <18	11.7	6	7	13	27	27	16	5
DURATION OF DIALYSIS (years)								
< 0.5	11.0	10	18	22	22	14	13	*
0.5 - 0.9	12.0	*	*	10	23	31	19	*
1.0 - 1.9	11.7	*	*	12	24	29	15	*
2.0 - 2.9	11.4	*	*	18	31	23	*	*
3.0 - 3.9	11.3	*	*	*	33	*	*	*
4.0 +	11.6	6	10	13	29	28	11	*
ACCESS TYPE								
AV Fistula	12.0	*	*	9	28	38	13	6
AV Graft**	11.8	*	*	*	29	23	21	*
Catheter	11.2	11	13	18	25	18	12	3
MEAN spKt/V								
≥ 1.2	11.6	7	9	14	28	26	13	3
< 1.2	11.0	*	*	24	*	*	*	*
MEAN SERUM ALBUMIN (g/dL)								
≥ 3.5/3.2 BCG/BCP^	11.7	6	8	15	27	27	14	4
< 3.5/3.2 BCG/BCP^	10.8	20	17	15	22	15	9	*

* Values suppressed because n < 11.
**Includes grafts with and without AVF.
^ BCG/BCP = bromcresol green/bromcresol purple laboratory methods.
Note: Percentages may not add up to 100% due to rounding.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

D. SERUM ALBUMIN TABLE

Findings for October-December 2006 (for patients < 18 years)

TABLE 24: *Percent of all pediatric (aged < 18 years) in-center hemodialysis patients with mean serum albumin values ≥ 4.0/3.7 g/dL (BCG/BCP)^, and ≥ 3.5/3.2 g/dL (BCG/BCP), by patient characteristics, October-December 2006. 2007 ESRD CPM Project.*

Patient Characteristics	Percent of Patients with Mean Serum Albumin ≥ 4.0/3.7 g/dL	≥ 3.5/3.2 g/dL
TOTAL	**49**	**82**
GENDER		
Male	54	84
Female	43	78
RACE		
American Indian/Alaska Native	*	82
Asian/Pacific Islander	*	72
Black or African American	47	81
White	50	83
Other/Unknown	*	*
ETHNICITY		
Hispanic	55	88
Non-Hispanic	46	79
AGE GROUP (years)		
0 - 4	40	81
5 - 9	45	80
10 - 14	42	75
15 to <18	55	86
DURATION OF DIALYSIS (years)		
< 0.5	39	73
0.5 - 0.9	47	83
1.0 - 1.9	51	82
2.0 - 2.9	56	86
3.0 - 3.9	46	80
4.0 +	53	85
ACCESS TYPE		
AV Fistula	60	90
AV Graft**	50	86
Catheter	43	77
MEAN spKt/V		
≥ 1.2	50	83
< 1.2	36	64
MEAN HGB(g/dL)		
≥11	56	87
< 11	33	71

^BCG/BCP = bromcresol green/bromcresol purple laboratory methods.
*Values suppressed because n < 11.
**Includes grafts with and without AVF.
Note: Percentages may not add up to 100% due to rounding.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

VIII. PEDIATRIC PERITONEAL DIALYSIS PATIENTS

This is the third year data were collected for pediatric (aged < 18 years) peritoneal dialysis patients. All patients aged < 18 years identified as receiving peritoneal dialysis on December 31, 2006 were included in this study (n = 759). 740 patients (97%) of this group met the case definition and were included in the sample for analysis. (See footnote to Table 6 on pg 11 for case definition).

This section describes the national findings for pediatric (aged < 18 years) peritoneal dialysis patients for core indicators related to peritoneal dialysis clearance, anemia management and serum albumin.

A. CLEARANCE TABLE

Findings for October 2006 – March 2007 (for patients < 18 years)

TABLE 25: *Description of peritoneal dialysis clearance for pediatric (aged < 18 years) peritoneal dialysis patients, by modality, October 2006 – March 2007. 2007 ESRD CPM Project.*

Weekly Kt/V_{urea}	**CAPD Patients^ ≥ 2.0**	**Cycler Patients^^ ≥ 2.1**	**All Patients^^^ ≥ 1.8**
% meeting target	69%	73%	87%
Mean ± SD	2.20 ± 0.74	2.52 ± 0.74	2.51 ± 0.74
Median	2.19	2.45	2.44
Weekly creatinine clearance (L/week/1.73m²)	**CAPD Patients ≥ 60**	**Cycler Patients ≥ 63**	
% meeting target	*	25%	
Mean ± SD	55.3 ± 29.0	55.3 ± 25.2	
Median	50.8	48.8	

*Value suppressed because n < 11.
^For CAPD patients, the delivered PD dose target has been a weekly $Kt/V_{urea} \geq 2.0$ and a weekly creatinine clearance ≥ 60 L/week/1.73m²
^^For cycler patients, the target has been a weekly $Kt/V_{urea} \geq 2.1$ and a weekly creatinine clearance ≥ 63 L/week/1.73m²
^^^Using the 2006 KDOQI guidelines and recommendations (29):
For pediatric peritoneal dialysis patients with and without renal kidney function: weekly $KtV_{urea} \geq 1.8$.

B. ANEMIA MANAGEMENT TABLE

Findings for October 2006- March 2007 (for patients < 18 years)

TABLE 26: *Mean hemoglobin values (g/dL) and distribution of mean hemoglobin categories for pediatric (aged < 18 years) peritoneal dialysis patients, by patient characteristics, October 2006 – March 2007. 2007 ESRD CPM Project.*

Patient Characteristics	**Mean Hgb (g/dL)**	**Percent of Patients with hemoglobin values**						
		<9	**9-9.9**	**10-10.9**	**11-11.9**	**12-12.9**	**13-13.9**	**14+**
ALL	**11.6**	**4**	**8**	**18**	**31**	**24**	**11**	**4**
GENDER								
Male	11.6	4	9	17	34	24	9	4
Female	11.7	4	7	19	27	25	13	5
RACE								
American Indian/ Alaska Native	11.4	*	*	*	*	*	*	*
Asian/Pacific Islander	11.6	*	*	*	*	*	*	*
Black or African American	11.4	7	8	21	30	23	10	*
White	11.7	3	8	17	31	25	11	6
Other/Unknown	*	*	*	*	*	*	*	*
ETHNICITY								
Hispanic	11.8	*	5	20	27	28	12	6
Non-Hispanic	11.5	5	9	17	33	22	10	4
AGE GROUP (years)								
0 - 4	11.5	*	9	22	30	20	10	*
5 - 9	11.3	*	12	16	33	24	*	*
10 - 14	11.8	*	6	16	31	26	12	5
15 to <18	11.8	*	6	17	29	26	13	6
CAUSE OF ESRD								
Congenital/Urologic	11.7	*	6	17	31	28	10	*
Other Causes Combined	11.6	4	8	18	31	22	11	5
DURATION OF DIALYSIS (years)								
< 0.5	11.8	*	7	14	29	27	13	*
0.5 - 0.9	11.8	*	8	21	23	24	14	8
1.0 - 1.9	11.6	*	*	18	38	23	8	*
2.0 - 2.9	11.5	*	*	*	37	27	*	*
3.0 - 3.9	11.2	*	*	26	29	29	*	*
4.0 +	11.4	*	9	22	29	19	11	*
MEAN WEEKLY Kt/V_{urea}								
≥ 2.0	11.7	3	6	18	32	28	10	4
< 2.0	11.6	*	12	18	29	21	11	*
MEAN SERUM ALBUMIN (g/dL)								
≥ 3.5/3.2 BCG/BCP^	11.8	2	6	16	31	27	12	5
< 3.5/3.2 BCG/BCP^	11.3	7	10	20	32	20	8	*

*Value suppressed because n < 11
^ BCG/BCP = bromcresol green/bromcresol purple laboratory methods
Note: Percentages may not add up to 100% due to rounding.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

C. SERUM ALBUMIN TABLE

Findings for October 2006 - March 2007 (for patients < 18 years)

TABLE 27: *Percent of pediatric (aged < 18 years) peritoneal dialysis patients with mean serum albumin values ≥ 4.0/3.7 g/dL (BCG/BCP)^ and ≥ 3.5/3.2 g/dL (BCG/BCP) in the U.S., by patient characteristics, October 2006 – March 2007. 2007 ESRD CPM Project.*

Patient Characteristics	Percent of Patients with Mean Serum Albumin ≥ 4.0/3.7 g/dL	≥ 3.5/3.2 g/dL
TOTAL	**27**	**64**
GENDER		
Male	29	65
Female	25	63
RACE		
American Indian/Alaska Native	*	*
Asian/Pacific Islander	*	*
Black or African American	23	58
White	29	67
Other/Uknown	*	*
ETHNICITY		
Hispanic	36	73
Non-Hispanic	23	60
AGE GROUP (years)		
0 - 4	20	51
5 - 9	20	59
10 - 14	29	69
15 to <18	37	74
CAUSE of ESRD		
Congenital/Urologic	28	64
Other Causes Combined	27	64
DURATION OF DIALYSIS (years)		
< 0.5	26	60
0.5 - 0.9	34	68
1.0 - 1.9	30	63
2.0 - 2.9	24	63
3.0 - 3.9	29	69
4.0 +	20	67
MEAN HGB (g/dL)		
≥ 11	31	68
< 11	19	55
MEAN WEEKLY Kt/V_{urea}		
≥ 2.0	28	65
< 2.0	33	71
MODALITY		
CAPD	*	56
Cycler	29	67

^ BCG/BCP = bromcresol green/bromcresol purple laboratory methods
* Value suppressed because n < 11.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

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Appendix 1. Centers for Medicare & Medicaid Services (CMS) Offices and ESRD Networks

CMS Offices

Centers for Medicare & Medicaid Services
Office of Clinical Standards & Quality
Quality Measurement and Health Assessment Group
Mailstop S3-02-01
7500 Security Boulevard
Baltimore, MD 21244
(410) 786-6940

Centers for Medicare & Medicaid Services - Region I
Division of Clinical Standards and Quality,
Clinical Standards Branch
Room 2275
JFK Federal Building
Boston, MA 02203-0003
(617) 565-3136

Centers for Medicare & Medicaid Services - Region VI
Division of Clinical Standards and Quality
Room 714
1301 Young Street
Dallas, TX 75202
(214) 767-4443

Centers for Medicare & Medicaid Services - Region VII
Division of Clinical Standards and Quality,
Medical Review Branch
Richard Bolling Federal Building
60l East l2th Street, Room 242
Kansas City, MO 64106-2808
(816) 426-5746

Centers for Medicare & Medicaid Services - Region X
Division of Clinical Standards and Quality
2201 Sixth Avenue, Mail Stop (RX-42)
Seattle, WA 98121-2500
(206) 615-2317

ESRD Networks

ESRD Network Organization No. 1
ESRD Network of New England, Inc.
30 Hazel Terrace
Woodbridge, CT 06525
Region I: ME, NH, VT, MA, CT, RI
(203) 387-9332

ESRD Network Organization No. 2
CKD Network of New York, Inc.
1979 Marcus Avenue, Suite 105
Lake Success, NY 11042-1002
Region I: NY
(516) 209-5578

ESRD Network Organization No. 3
TransAtlantic Renal Council
Cranbury Gates Office Park
109 South Main Street, Suite 21
Cranbury, NJ 08512-3174
Region I: NJ, PR, VI
(609) 490-0310

ESRD Network Organization No. 4
40 24th Street, Suite 410
Pittsburgh, PA 15222
Region: DE, PA
(412) 325-2250

ESRD Network Organization No. 5
Mid-Atlantic Renal Coalition
1527 Huguenot Road
Midlothian, VA 23113
Region I: DC, MD, VA, WV
(804) 794-3757

ESRD Network Organization No. 6
Southeastern Kidney Council, Inc.
1000 St. Albans Drive, Suite 270
Raleigh, NC 27609
Region VI: GA, NC, SC
(919) 855-0882

ESRD Network Organization No. 7
FMQAI: The Florida ESRD Network
5201 West Kennedy Boulevard, Suite 900
Tampa, FL 33609
Region: FL
(813) 383-1530

ESRD Network Organization No. 8
Network Eight, Inc.
P.O. Box 321475
Jackson, MS 39232-1475
Region VI: AL, MS, TN
(601) 936-9260

ESRD Network Organization No. 9 & 10
The Renal Network, Inc.
911 East 86th Street, Suite 202
Indianapolis, IN 46240-1858
Region VII: KY, IN, OH, IL
(317) 257-8265

ESRD Network Organization No. 11
Renal Network of the Upper Midwest, Inc.
1360 Energy Park Drive, Suite 200
St. Paul, MN 55108
Region: MI, MN, ND, SD, WI
(651) 644-9877

ESRD Network Organization No. 12
Heartland Kidney Network
7505 NW Tiffany Springs Parkway, Suite 230
Kansas City, MO 64153
Region VII: MO, IA, NE, KS
(816) 880-9990

ESRD Network Organization No. 13
4200 Perimeter Center Drive, Suite 102
Oklahoma City, OK 73112-2314
Region: AR, LA, OK
(405) 942-6000

ESRD Network Organization No. 14
ESRD Network of Texas, Inc.
4040 McEwen, Suite 350
Dallas, TX 75244-5015
Region VI: TX
(972) 503-3215

ESRD Network Organization No. 15
Intermountain ESRD Network, Inc.
1301 Pennsylvania Street, Suite 750
Denver, CO 80203-5012
Region X: NM, CO, WY, UT, AZ, NV
(303) 831-8818

ESRD Network Organization No. 16
Northwest Renal Network
4702 42nd Avenue, SW
Seattle, WA 98116
Region X: MT, AK, ID, OR, WA
(206) 923-0714

ESRD Network Organization No. 17
Western Pacific Renal Network, LLC
505 San Marin Drive, Building A, Suite 300
Novata, CA 94945
Region X: No. CA, HI, Mariana Isl., GU, AS
(415) 897-2400

ESRD Network Organization No. 18
Southern California Renal Disease Council, Inc.
6255 Sunset Boulevard, Suite 2211
Los Angeles, CA 90028
Region X: So. CA
(323) 962-2020

END STAGE RENAL DISEASE NETWORKS

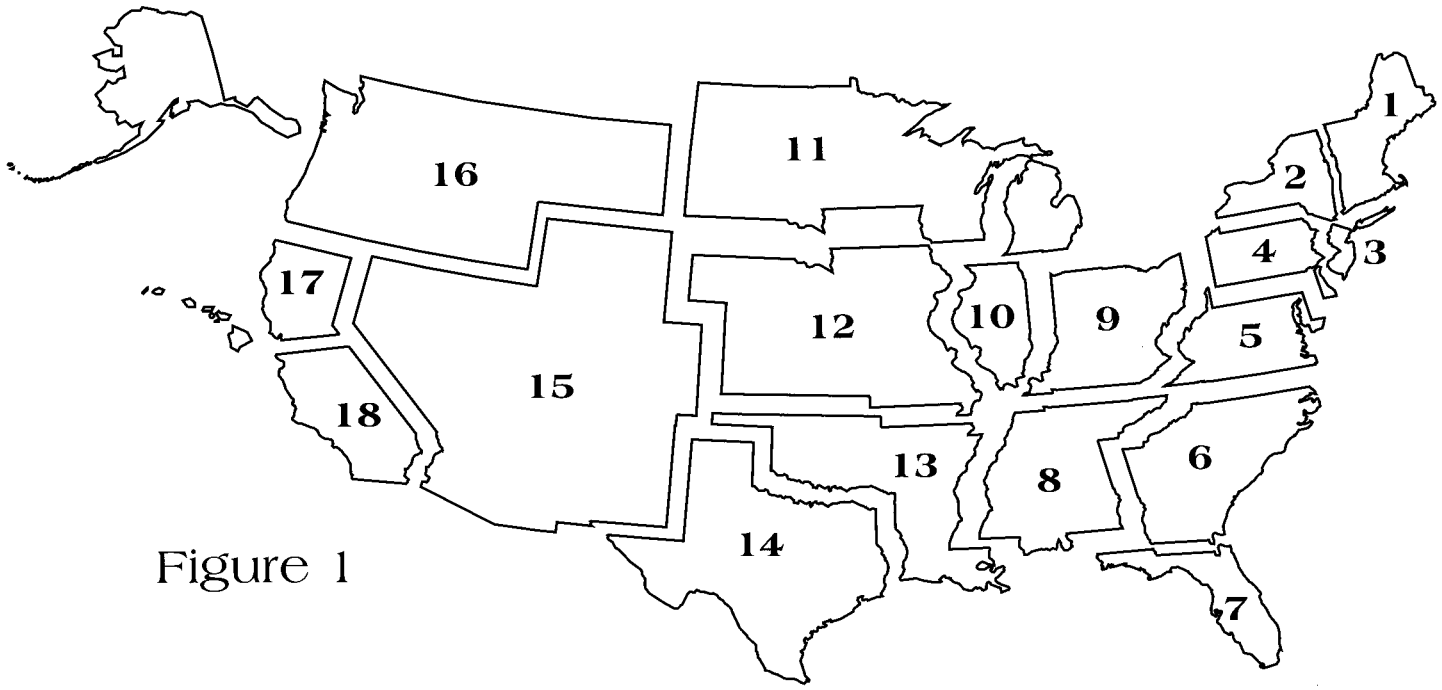

Figure 1

ESRD Network No. 1
Maine, New Hampshire, Vermont,
Massachusetts, Connecticut, Rhode Island

ESRD Network No. 2
New York State

ESRD Network No. 3
New Jersey, Puerto Rico,
U.S. Virgin Islands

ESRD Network No. 4
Pennsylvania, Delaware

ESRD Network No. 5
District of Columbia, Maryland,
Virginia, West Virginia

ESRD Network No. 6
Georgia, North Carolina, South Carolina

ESRD Network No. 7
Florida

ESRD Network No. 8
Alabama, Mississippi, Tennessee

ESRD Network No. 9
Kentucky, Indiana, Ohio

ESRD Network No. 10
Illinois

ESRD Network No. 11
Michigan, Minnesota, Wisconsin,
North Dakota, South Dakota

ESRD Network No. 12
Missouri, Iowa, Nebraska, Kansas

ESRD Network No. 13
Arkansas, Louisiana, Oklahoma

ESRD Network No. 14
Texas

ESRD Network No. 15
New Mexico, Colorado, Wyoming,
Utah, Arizona, Nevada

ESRD Network No. 16
Montana, Alaska, Idaho, Oregon,
Washington

ESRD Network No. 17
Northern California, Hawaii,
Pacific Trust Territory, Guam,
American Samoa

ESRD Network No. 18
Southern California

XI. Appendices

Appendix 2. ESRD Clinical Performance Measures (CPMs) for 2007 Data Collection Effort

Study period for HD patients is Oct, Nov, Dec 2006; for PD patients is Oct, Nov, Dec 2006 and Jan, Feb, Mar 2007.

Hemodialysis (HD) Adequacy

1. HD Adequacy CPM I: Monthly Measurement of Delivered Hemodialysis Dose.

HD Adequacy Guideline 1: Regular Measurement of the Delivered Dose of Hemodialysis (Evidence).
The dialysis care team should routinely measure and monitor the delivered dose of hemodialysis.
HD Adequacy Guideline 6: Frequency of Measurement of Hemodialysis Adequacy (Opinion).
The delivered dose of hemodialysis should be measured at least once a month in all adult and pediatric hemodialysis patients. The frequency of measurement of the delivered dose of hemodialysis should be increased when:
1. Patients are noncompliant with their hemodialysis prescriptions (missed treatments, late for treatments, early sign-off from hemodialysis treatments, etc.).
2. Frequent problems are noted in delivery of the prescribed dose of hemodialysis (such as variably poor blood flows, or treatment interruptions because of hypotension or angina pectoris).
3. Wide variability in urea kinetic modeling results is observed in the absence of prescription changes.
4. The hemodialysis prescription is modified.

Numerator:
Number of patients in denominator with documented monthly adequacy measurements (URR or spKt/V) during the study period. (The study period for HD patients is Oct, Nov, Dec 2006).

Denominator:
All adult (≥ 18 years old) HD patients in the sample for analysis.

2. HD Adequacy CPM II: Method of Measurement of Delivered Hemodialysis Dose.

HD Adequacy Guideline 2: Method of Measurement of Delivered Dose of Hemodialysis (Evidence).
The delivered dose of hemodialysis in adult and pediatric patients should be measured using formal urea kinetic modeling (UKM), employing the single-pool, variable volume model.

Numerator:
Number of patients in denominator for whom delivered HD dose was calculated using formal urea kinetic modeling or Daugirdas II during the study period.

Denominator:
All adult (≥ 18 years old) HD patients in the sample for analysis.

3. HD Adequacy CPM III: Minimum Delivered Hemodialysis Dose.

HD Adequacy Guideline 4: Minimum Delivered Dose of Hemodialysis (Adults-Evidence, Children-Opinion). The dialysis care team should deliver a spKt/V of at least 1.2 (single-pool, variable volume) for both adult and pediatric hemodialysis patients. For those using the urea reduction ratio (URR), the delivered dose should be equivalent to a spKt/V of 1.2, i.e., an average URR of 65%; however URR can vary substantially as a function of fluid removal.

Numerator:
Number of patients in denominator whose average delivered dose of HD (calculated from data points on the data collection form) was a spKt/V ≥ 1.2 during the study period.

Denominator:
All adult (≥18 years old) HD patients in the sample for analysis who have been on HD for six months or more and dialyzing three times per week.

Peritoneal Dialysis (PD) Adequacy

4. PD Adequacy CPM I: Measurement of Total Solute Clearance at Regular Intervals.

PD Adequacy Guideline 4: Measures of Peritoneal Dialysis Dose and Total Solute Clearance (Opinion).
Both total weekly creatinine clearance normalized to 1.73 m^2 body surface area (BSA) and total weekly Kt/V_{urea} should be used to measure delivered peritoneal dialysis doses.
PD Adequacy Guideline 11: Dialysate and Urine Collections (Opinion).
Two to three total solute removal measurements are required during the first six months of peritoneal dialysis (See Guideline 3).

After six months, if the dialysis prescription is unchanged:
1. Perform both complete dialysate and urine collections every four months; and

2. Perform urine collections every two months until the renal weekly Kt/V_{urea} is <0.1.
Thereafter, urine collections are no longer necessary, as the residual renal function contribution to total Kt/V_{urea} becomes negligible (See Guideline 5).

Numerator:
Number of patients in denominator with total solute clearance for urea and creatinine measured at least once in a 6 month time period. (The study period for PD patients is Oct, Nov, Dec 2006 and Jan, Feb, Mar 2007).

Denominator:
All adult (≥ 18 years old) PD patients in sample for analysis, excluding tidal dialysis patients.

5. PD Adequacy CPM II: Calculate Weekly Kt/V_{urea} and Creatinine Clearance in a Standard Way.

PD Adequacy Guideline 4: Measures of Peritoneal Dialysis Dose and Total Solute Clearance (Opinion).
Both total weekly creatinine clearance normalized to 1.73 m^2 body surface area (BSA) and total weekly Kt/V_{urea} should be used to measure delivered peritoneal dialysis doses.
PD Adequacy Guideline 6: Assessing Residual Renal Function (Evidence).
Residual renal function (RRF), which can provide a significant component of total solute and water removal, should be assessed by measuring the renal component of Kt/V_{urea} and estimating the patient's glomerular filtration rate (GFR) by calculating the mean of urea and creatinine clearance.

PD Adequacy Guideline 9: Estimating Total Body Water and Body Surface Area (Opinion).
V (total body water) should be estimated by either the Watson or Hume method in adults using actual body weight.
Watson method:
For Men: V (liters) = 2.447 + 0.3362*Wt(kg) + 0.1074*Ht(cm) - 0.09516*Age(years)
For Women: V = -2.097 + 0.2466*Wt + 0.1069*Ht
Hume method:
For Men: V = -14.012934 + 0.296785*Wt + 0.192786*Ht
For Women: V = -35.270121 + 0.183809*Wt + 0.344547*Ht
BSA should be estimated by either the DuBois and DuBois method, the Gehan and George method, or the Haycock method using actual body weight.
For all formulae, Wt is in kg and Ht is in cm:
DuBois and DuBois method: $BSA\ (m^2) = 0.007184*Wt^{0.425}*Ht^{0.725}$
Gehan and George method: $BSA\ (m^2) = 0.0235*Wt^{0.51456}*Ht^{0.42246}$
Haycock method: $BSA\ (m^2) = 0.024265*Wt^{0.5378}*Ht^{0.3964}$

Numerator:
The number of patients in denominator with all of the following:
a. Weekly creatinine clearance normalized to 1.73 m^2 body surface area (BSA) and total weekly Kt/V_{urea} used to measure delivered PD dose; and
b. Residual renal function (unless negligible*) is assessed by measuring the renal component of Kt/V_{urea} and estimating the patient's glomerular filtration rate (GFR) by calculating the mean of urea and creatinine clearance; and
c. Total body water (V) estimated by either the Watson or Hume method using actual body weight, and BSA estimated by either the DuBois and DuBois method, the Gehan and George method, or the Haycock method of using actual body weight, during the study period.
* negligible = < 200 mL urine in 24 hours.

Denominator:
All adult (≥ 18 years old) PD patients in the sample for analysis, excluding tidal dialysis patients.

6. PD Adequacy CPM III: Delivered Dose of Peritoneal Dialysis.

PD Adequacy Guideline 15: Weekly Dose of CAPD (Evidence).
For CAPD, the delivered peritoneal dialysis dose should be a total Kt/V_{urea} of at least 2.0 per week and a total creatinine clearance (CrCl) of at least 60 L/week/1.73 m^2.
PD Adequacy Guideline 16: Weekly Dose of NIPD and CCPD (Opinion).
For NIPD, the weekly delivered peritoneal dialysis dose should be a total Kt/V_{urea} of at least 2.2 and a weekly total CrCL of at least 66 L/1.73 m^2.
For CCPD, the weekly delivered peritoneal dialysis dose should be a total Kt/V_{urea} of at least 2.1 and a weekly total CrCl of at least 63 L/1.73 m^2.

Numerator:
a. For CAPD patients in the denominator, the delivered PD dose was a weekly Kt/V_{urea} of at least 2.0 and a weekly CrCl of at least 60 L/week/1.73 m^2 or evidence that the prescription was changed according to NKF-K/DOQI recommendations, during the study period.

b. For cycler patients in the denominator without a daytime dwell (NIPD), the delivered PD dose was a weekly Kt/V_{urea} of at least 2.2 and a weekly CrCl of at least 66 L/week/1.73 m^2 or evidence that the prescription was changed according to NKF-K/DOQI recommendations, during the study period. For cycler patients in the denominator with a daytime dwell (CCPD), the delivered PD dose was a weekly Kt/V_{urea} of at least 2.1 and a weekly CrCl of at least 63 L/week/1.73 m^2 or evidence that the prescription was changed according to NKF-K/DOQI recommendations, during the study period.

Denominator:
All adult (≥ 18 years old) PD patients in the sample for analysis, excluding tidal dialysis patients.

Vascular Access

7. Vascular Access CPM I: Maximizing Placement of Arterial Venous Fistulae (AVF).

Vascular Access Guideline 29A: Goals of Access Placement-Maximizing Primary Arterial Venous Fistulae (Opinion). Primary arterial venous fistulae (AVF) should be constructed in at least 50% of all new patients electing to receive hemodialysis as their initial form of renal replacement therapy. Ultimately, 40% of prevalent patients should have a native AV fistula. (See Guideline 3, Selection of Permanent Vascular Access and Order of Preference of AV Fistulae).

Numerator:
a. The number of incident patients in the denominator who were dialyzed using an AVF during their last HD treatment during the study period. (The study period for HD patients is Oct, Nov, Dec 2006).
b. The number of prevalent patients in the denominator who were dialyzed using an AVF during their last HD treatment during the study period.

Denominator:
a. Incident adult (≥ 18 years old) HD patients (defined as those patients initiating their most recent course of HD on or between Jan 1 and Aug 31, 2006) in the sample for analysis.
b. Prevalent adult (≥ 18 years old) HD patients in the sample for analysis.

8. Vascular Access CPM II: Minimizing Use of Catheters as Chronic Dialysis Access.

Vascular Access Guideline 30A: Goals of Access Placement- Use of Catheters for Chronic Dialysis (Opinion). Less than 10% of chronic maintenance hemodialysis patients should be maintained on catheters as their permanent chronic dialysis access. In this context, chronic catheter access is defined as the use of a dialysis catheter for more than three months in the absence of a maturing permanent access.

Numerator:
The number of patients in the denominator who were dialyzed with a chronic catheter continuously for 90 days or longer prior to the last HD session during the study period.

Denominator:
All adult (≥ 18 years old) patients in the sample for analysis.

9. Vascular Access CPM III: Surveillance of Arterial Venous Grafts for Stenosis.

Vascular Access Guideline 10: Surveillance of Dialysis AV Grafts for Stenosis (Evidence/Opinion).
Physical examination of an access graft should be performed weekly and should include, but not be limited to, inspection and palpation for pulse and thrill at the arterial, mid, and venous sections of the graft (Opinion). Dialysis arterial venous graft accesses should be surveyed for hemodynamically significant stenosis. The DOQI Work Group recommends an organized surveillance approach with regular assessment of clinical parameters of the arterial venous access and dialysis adequacy. Data from the surveillance tests, clinical assessment, and dialysis adequacy measurements should be collected and maintained for each patient's access and made available to all staff. The data should be tabulated and tracked within each dialysis center as part of a Quality Assurance/ Continuous Quality Improvement (QA/CQI) program (Opinion). Prospective surveillance of arterial venous grafts for hemodynamically significant stenosis, when combined with correction, improves patency and decreases the incidence of thrombosis (Evidence). Techniques, not mutually exclusive, that can be used to survey for stenosis in arterial venous grafts include:
A. Intra-access flow (Evidence)
B. Static venous pressures (Evidence)
C. Dynamic venous pressures (Evidence)
Other studies or information that can be useful in detecting arterial venous graft stenosis include:
D. Measurement of access recirculation using urea concentrations (See Guideline 12) (Evidence)

E. Measurement of recirculation using dilution flow techniques (nonurea-based) (Evidence)
F. Unexplained decreases in the measured amount of hemodialysis delivered (URR, Kt/V) (Evidence)
G. Physical findings of persistent swelling of the arm, clotting of the graft, prolonged bleeding after needle withdrawal, or altered characteristics of pulse or thrill in a graft (Evidence/Opinion)
H. Elevated negative arterial pre-pump pressures that prevent increasing to acceptable blood flow (Evidence/Opinion)
I. Doppler ultrasound (Evidence/Opinion)
Persistent abnormalities in any of these parameters should prompt referral for venography (Evidence).

Numerator:
The number of patients in the denominator whose AV graft was routinely surveyed (screened) for the presence of stenosis during the study period by one of the following methods and with the stated frequency: Color-flow Doppler at least once every 3 months; Static venous pressure at least once every 2 weeks; Dynamic venous pressure every HD session; Dilution technique at least once every 3 months.

Denominator:
All adult (≥ 18 years old) patients in the sample for analysis who were on HD continuously during the study period and who were dialyzed through an arterial venous graft during their last HD session during the study period.

Anemia Management

10. Anemia Management CPM I: Target Hemoglobin for Epoetin Therapy.

Anemia Management Guideline 4: Target Hemoglobin (Hgb) for Epoetin Therapy (Evidence/Opinion).
The target range for hemoglobin should be 11-12 g/dL (110-120 g/L) (Evidence). This target is for epoetin therapy and is not an indication for blood transfusion therapy (Opinion).

Numerator:
Number of patients in denominator with documented mean Hgb of 11-12 g/dL (110-120 g/L) during the study period. (The study period for HD patients is Oct, Nov, Dec 2006 and Oct, Nov, Dec 2006 and Jan, Feb, Mar 2007 for PD patients).

Denominator:
All adult (≥ 18 years old) HD or PD patients in the sample for analysis, exclude patients with mean Hgb > 12 g/dL (120 g/L) who are not prescribed epoetin at any time during the study period.

11. Anemia Management CPM IIa: Assessment of Iron Stores among Anemic Patients or Patients Prescribed Epoetin.

Anemia Management Guideline 5: Assessment of Iron Status (Evidence).
Iron status should be monitored by the percent transferrin saturation and the serum ferritin concentration.
Anemia Management Guideline 6A: Target Iron Level (Evidence).
Chronic renal failure patients should have sufficient iron to achieve and maintain a Hgb of 11 to 12 g/dL (110-120 g/L).
Anemia Management Guideline 7A: Monitoring Iron Status (Opinion).
During the initiation of epoetin therapy and while increasing the epoetin dose in order to achieve an increase in hematocrit/hemoglobin, the transferrin saturation and the serum ferritin concentration should be checked every month in patients not receiving intravenous iron, and at least once every 3 months in patients receiving intravenous iron, until target hematocrit/hemoglobin is reached.
Anemia Management Guideline 7B: Monitoring Iron Status (Opinion).
Following attainment of the target hematocrit/hemoglobin, transferrin saturation and serum ferritin concentration should be determined at least once every 3 months.

Numerator:
a. The number of HD patients in the denominator with at least one documented transferrin saturation and serum ferritin concentration result every three months.
b. The number of PD patients in the denominator with at least two documented transferrin saturation and serum ferritin concentration results over the six-month study period.
[Note: Not directly comparable to Numerator “a”, but most feasible given probable frequency of visits for PD patients.]

Denominator:
a. All adult (≥ 18 years old) HD patients included in the sample for analysis, if first monthly Hgb is < 11 g/dL (110 g/L) for at least one of the study months or if prescribed epoetin at any time during the study period regardless of Hgb.
b. All adult (≥ 18 years old) PD patients included in the sample for analysis, if first monthly Hgb is < 11 g/dL (110 g/L) for at least one of the two-month periods during the six-month study period or if prescribed epoetin at any time during the study period regardless of Hgb.

12. Anemia Management CPM IIb: Maintenance of Iron Stores-Target.

Anemia Management Guideline 6B: Target Iron Level (Evidence).
To achieve and maintain target Hgb of 11-12 g/dL (110-120 g/L) , sufficient iron should be administered to maintain a transferrin saturation of ≥ 20%, and a serum ferritin concentration of ≥100 ng/mL.

Numerator:
a. The number of HD patients in the denominator with at least one documented transferrin saturation ≥ 20% and at least one documented serum ferritin concentration ≥ 100 ng/mL during a three-month period.

b. The number of PD patients in the denominator with at least one documented transferrin saturation ≥ 20% and at least one documented serum ferritin concentration ≥ 100 ng/mL during the six-month study period.
[Note: Not directly comparable to Numerator "a", but most feasible given probable frequency of visits for PD patients.]

Denominator:
a. All adult (≥ 18 years old) HD patients included in sample, if first monthly Hgb is < 11 g/dL (110 g/L) for at least one of the study months or if prescribed epoetin at any time during the study period regardless of Hgb.
b. All adult (≥ 18 years old) PD patients included in sample, if first monthly Hgb is < 11 g/dL (110 g/L) for at least one of the two-month periods during the six-month study period or if prescribed epoetin at any time during the study period regardless of Hgb.

13. Anemia Management CPM III: Administration of Supplemental Iron.

Anemia Management Guideline 8A: Administration of Supplemental Iron (Evidence).
Supplemental iron should be administered to prevent iron deficiency and to maintain adequate iron stores so that chronic renal failure patients can achieve and maintain a Hgb of 11 to 12 g/dL (110-120 g/L) in conjunction with epoetin therapy.
Anemia Management Guideline 8C: Administration of Supplemental Iron (Evidence/Opinion).
The adult pre-dialysis, home hemodialysis, and peritoneal dialysis patient may not be able to maintain adequate iron status with oral iron. Therefore, 500 to 1000 mg of iron dextran may be administered intravenously in a single infusion, and repeated as needed, after an initial one-time test dose of 25 mg.
Anemia Management Guideline 8D: Administration of Supplemental Iron (Opinion/Evidence).
A trial of oral iron is acceptable in the hemodialysis patient, but is unlikely to maintain the transferrin saturation > 20%, serum ferritin concentration > 100 ng/mL, and Hgb at 11-12 g/dL (110-120 g/L).
Anemia Management Guideline 8G: Administration of Supplemental Iron (Opinion/Evidence).
Most patients will achieve a Hgb 11 to 12 g/dL (110-120 g/L) with transferrin saturation and serum ferritin concentration < 50% and < 800 ng/mL, respectively. In patients in whom transferrin saturation is ≥ 50% and/or serum ferritin concentration is ≥ 800 ng/mL, intravenous iron should be withheld for up to three months, at which time the iron parameters should be re-measured before intravenous iron is resumed. When the transferrin saturation and serum ferritin concentration have fallen to < 50% and < 800 ng/mL, respectively, intravenous iron can be resumed at a dose reduced by one-third to one-half.
Anemia Management Guideline 8H: Administration of Supplemental Iron (Opinion).
It is anticipated that once optimal hematocrit/hemoglobin and iron stores are achieved, the required maintenance dose of intravenous iron may vary from 25 to 100 mg/week for hemodialysis patients. The goal is to provide a weekly dose of intravenous iron in hemodialysis patients that will allow the patient to maintain the target hematocrit/hemoglobin at a safe and stable iron level. The maintenance iron status should be monitored by measuring the transferrin saturation and serum ferritin concentration every three months.

Numerator:
a. The number of HD patients in the denominator prescribed intravenous iron in at least one of the study months.
b. The number of PD patients in denominator prescribed intravenous iron in at least one of the two-month periods during the six-month study period

Denominator:
a. All adult (≥ 18 years old) HD patients included in the sample for analysis if first monthly Hgb < 11 g/dL (110 g/L) for at least one month out of a three-month period or prescribed epoetin at any time during the study period regardless of Hgb level, with at least one transferrin saturation < 20% or at least one serum ferritin concentration < 100 ng/mL. EXCLUDE patients with mean transferrin saturation ≥ 50% or mean serum ferritin concentration ≥ 800 ng/mL and EXCLUDE patients in first three months of dialysis and prescribed oral iron.
b. All adult (≥ 18 years old) PD patients included in the sample for analysis if the first Hgb in a two-month period < 11 g/dL (110 g/L) for at least one of the two-month periods during the six-month study period or prescribed epoetin at any time during the study period regardless of Hgb level, with at least one transferrin saturation < 20% or at least one serum ferritin concentration < 100 ng/mL. EXCLUDE patients with mean transferrin saturation ≥ 50% or mean serum ferritin concentration ≥ 800 ng/mL and EXCLUDE patients in first three months of dialysis and prescribed oral iron.

IN-CENTER HEMODIALYSIS (HD) CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007

[Before completing please read instructions at the bottom of this page and on pages 5 and 6]

PATIENT IDENTIFICATION		MAKE CORRECTIONS TO PATIENT INFORMATION ON LABEL IN THE SPACE BELOW
1. ,	2. / /	
3.	4.	
5.	6.	
7.	8. / /	
9.	10.	
	11. / /	

12. If this patient is unknown or was not dialyzed in the facility at any time during OCT 2006 - DEC 2006 return the blank form to the Network.

13. Patient's Ethnicity (Check appropriate box). ☐ Not Hispanic or Latino

☐ Hispanic or Latino: Please specify country/area of origin or ancestry 0

14. Patient's height (MUST COMPLETE): _____ inches **OR** _____ centimeters

(only for patients < 18 years old, provide date when height was measured: / /)

Individual Completing Form (Please print):

First name: Last Name: Title:

Phone number: ( ) - Fax Number: ( ) -

INSTRUCTIONS FOR COMPLETING THE IN-CENTER HEMODIALYSIS CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007

The label on the top left side of this form contains the following patient identifying information (#'s 1-11). If the information is incorrect make corrections to the right of the label.

1. LAST and first name
3. Social Security Number (SSN)
5. GENDER (1=Male; 2=Female)
7. PRIMARY cause of renal failure by CMS-2728 code
9. ESRD Network number - Do not make corrections to this item.
2. DATE of birth (DOB) as MM/DD/YYYY
4. HEALTH Insurance Claim Number (HIC), **(same as Medicare number)**
6. RACE, check all that apply (1=American Indian/Alaska Native; 2=Asian; 3=Black or African American; 4=White; 6=Native Hawaiian or Other Pacific Islander)
8. DATE, as MM/DD/YYYY, that the patient FIRST began a regular course of dialysis
10. Facility's Medicare provider number
11. The most RECENT date this patient returned to hemodialysis following: transplant failure, an episode of regained kidney function, or switched modality.

12. If the patient is unknown or if the patient was not dialyzed in the facility at any time during OCT 2006 through DEC 2006, send the blank form back to the ESRD Network office. Provide the name and address of the facility providing services to this patient on December 31, 2006, if known.
13. Patient's Ethnicity. Please verify the patient's ethnicity with the patient and check appropriate box. If "Hispanic or Latino" is checked, please specify country/area of origin or ancestry.
14. Enter the patient's height in inches or centimeters. HEIGHT MUST BE ENTERED, do not leave this field blank. You may ask the patient his/her height to obtain this information. If the patient had both legs amputated, record pre-amputation height.

PLEASE COMPLETE ITEMS 15 AND 16 ON PAGE 2, ITEM 17 ON PAGE 3, AND ITEMS 18 AND 19 ON PAGE 4 OF THIS DATA COLLECTION FORM.
INSTRUCTIONS FOR COMPLETING THESE ITEMS ARE ON PAGES 5 AND 6.

IN-CENTER HEMODIALYSIS (HD) CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)

15. ANEMIA MANAGEMENT: For each lab question below, enter the 1st pre-dialysis lab value obtained for each month: OCT, NOV, DEC 2006. Include the date each lab was drawn. Enter NF/NP if the lab value cannot be located.

	OCT 2006	NOV 2006	DEC 2006
A. First pre-dialysis laboratory hemoglobin (HGB) of the month:	___ ___ . ___ g/dL Date: ___/___/_____ (If NF/NP go to 15C)	___ ___ . ___ g/dL Date: ___/___/_____ (If NF/NP go to 15C)	___ ___ . ___ g/dL Date: ___/___/_____ (If NF/NP go to 15C)
B.1.a. Did the patient have Epoetin prescribed at any time during the 28 days before the Hgb in 15A was drawn ?	Epoetin ☐ Yes ☐ No ☐ Unknown	Epoetin ☐ Yes ☐ No ☐ Unknown	Epoetin ☐ Yes ☐ No ☐ Unknown
B.1.b. Did the patient have Darbepoetin (Aranesp) prescribed at any time during the 28 days before the Hgb in 15A was drawn ?	Darbepoetin ☐ Yes ☐ No ☐ Unknown	Darbepoetin ☐ Yes ☐ No ☐ Unknown	Darbepoetin ☐ Yes ☐ No ☐ Unknown
C. First pre-dialysis serum ferritin concentration of the month:	___ ___ ___ ___ ng/mL Date: ___/___/_____	___ ___ ___ ___ ng/mL Date: ___/___/_____	___ ___ ___ ___ ng/mL Date: ___/___/_____
D. First pre-dialysis % transferrin saturation (TSAT) of the month:	___ ___ ___ % Date: ___/___/_____	___ ___ ___ % Date: ___/___/_____	___ ___ ___ % Date: ___/___/_____
E. Was iron prescribed at any time during the month ?	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown
F. If yes, what was the prescribed route of iron administration ? (Check all that apply).	☐ IV ☐ PO ☐ Unknown	☐ IV ☐ PO ☐ Unknown	☐ IV ☐ PO ☐ Unknown

16. MINERAL METABOLISM MANAGEMENT: Enter the 1st pre-dialysis serum calcium, phosphorus, and albumin obtained for each month: OCT, NOV, DEC 2006. Include the date each lab was drawn. Enter NF/NP if the lab value cannot be located. Check the method used (16D) (BCG [bromcresol green] or BCP [bromcresol purple]) by the lab to determine serum albumin. If the lab method is unknown, please call lab to find out.

	OCT 2006	NOV 2006	DEC 2006
A. First pre-dialysis serum calcium of the month. Drawn on the same date as 16C:	___ ___ . ___ mg/dL Date: ___/___/_____	___ ___ . ___ mg/dL Date: ___/___/_____	___ ___ . ___ mg/dL Date: ___/___/_____
B. First pre-dialysis serum phosphorus of the month. Drawn on the same date as 16C:	___ ___ . ___ mg/dL Date: ___/___/_____	___ ___ . ___ mg/dL Date: ___/___/_____	___ ___ . ___ mg/dL Date: ___/___/_____
C. First pre-dialysis serum albumin of the month.	___ . ___ gm/dL Date: ___/___/_____	___ . ___ gm/dL Date: ___/___/_____	___ . ___ gm/dL Date: ___/___/_____
D. Check lab method used: BCG = bromcresol green BCP = bromcresol purple	☐ BCG ☐ BCP	☐ BCG ☐ BCP	☐ BCG ☐ BCP

IN-CENTER HEMODIALYSIS (HD) CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)

17. ADEQUACY: Enter the information requested below for the dialysis session when the 1st labs of the month were drawn and used to measure adequacy for each month: OCT, NOV, DEC 2006. Include the date the labs were drawn. Enter NF/NP if the information cannot be located.

	OCT 2006	NOV 2006	DEC 2006
A. How many times per week was this patient prescribed to receive dialysis during the week prior to when the pre and post BUNs were drawn ?	_____ times per week	_____ times per week	_____ times per week
B. First pre-dialysis BUN value of the month:	_____ mg/dL Date: ___/___/_____	_____ mg/dL Date: ___/___/_____	_____ mg/dL Date: ___/___/_____
C. First post-dialysis BUN value of the month: (both the pre & post dialysis BUN must be drawn on the same day)	_____ mg/dL Date: ___/___/_____	_____ mg/dL Date: ___/___/_____	_____ mg/dL Date: ___/___/_____
D. Pre- & Post-dialysis weight at session when BUNs above drawn: (Circle either lbs or kgs)	Pre: _____ . __ lbs / kgs Post: _____ . __ lbs / kgs	Pre: _____ . __ lbs / kgs Post: _____ . __ lbs / kgs	Pre: _____ . __ lbs / kgs Post: _____ . __ lbs / kgs
E. Actual DELIVERED time on dialysis at session when BUNs above drawn:	____ hrs 0 min	____ hrs 0 min	____ hrs 0 min
F. First recorded URR of the month:	___ ___ . ___ % Date: ___/___/_____	___ ___ . ___ % Date: ___/___/_____	___ ___ . ___ % Date: ___/___/_____
G. First record single-pool Kt/V of the month:	___ . ___ ___ Date: ___/___/_____	___ . ___ ___ Date: ___/___/_____	___ . ___ ___ Date: ___/___/_____
H. Method used to calculate the single-pool Kt/V in 17G: (If unknown, please ask Medical Directot)	☐ Urea Kinetic Modeling ☐ Daugirdas II ☐ Depner ☐ Derived from URR based on no pt wts ☐ Other: _____	☐ Urea Kinetic Modeling ☐ Daugirdas II ☐ Depner ☐ Derived from URR based on no pt wts ☐ Other: _____	☐ Urea Kinetic Modeling ☐ Daugirdas II ☐ Depner ☐ Derived from URR based on no pt wts ☐ Other: _____

IN-CENTER HEMODIALYSIS (HD) CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)

18. VASCULAR ACCESS: What type of access was used on the last hemodialysis session on or between 10/1/2006 and 12/31/2006 at the patient's primary in-center facility ? Check only ONE of the following access types and follow the corresponding directions.

☐ AV Fistula
☐ Graft with AV Fistula
☐ Graft without AV Fistula

If you checked AV Fistula or Graft (with or without AV Fistula) please answer questions 1, 2, and 3 at the right.

If patient had AV Fistula or Graft:

1. Was surveillance for the presence of stenosis performed between 10/1/06 and 12/31/06 ?
   ☐ Yes ☐ No ☐ Unknown
2. If answer to question 1 is "Yes", please check all methods of surveillance (below) that were utilized. (See instructions on page 6).
   ☐ Color-Flow Doppler at least once between 10/1/06 and 12/31/06
   ☐ Static Venous Pressure at least once every 2 weeks between 10/1/06 and 12/31/06
   ☐ Dynamic Venous Pressure every HD session between 10/1/06 and 12/31/06
   ☐ Dilution Technique at least once between 10/1/06 and 12/31/06
   ☐ On-Line Clearance (OLC) Based Access Flow at least once between 10/1/06 and 12/31/06
   ☐ Other _____
3. Did the patient have an active AV Fistula or Graft (being used for hemodialysis) AND an inactive catheter or port access (not being used for hemodialysis) during the last hemodialysis session on or between 10/1/2006 and 12/31/2006 ?
   ☐ Yes ☐ No

☐ Catheter
☐ Port Access

If you checked Catheter or Port Access, please answer questions 1 and 2 at the right. (Check all that apply to reasons for catheter or port access at this time)

If patient had a catheter or port access: (check all boxes by the reasons that apply)

1. Reason for catheter or port access:
   ☐ Fistula maturing, not ready to cannulate (with two needles)
   ☐ Graft maturing, not ready to cannulate (with two needles)
   ☐ Temporary interruption of fistula due to clotting or revisions
   ☐ Temporary interruption of graft due to clotting or revisions
   ☐ No fistula or graft surgically created at this time
   ☐ No fistula or graft surgically planned (check all subcategories that apply)
   - ○ Peripheral vascular disease
   - ○ Patient size too small for AV fistula or graft
   - ○ Renal transplantation scheduled
   - ○ Patient preference
   - ○ Physician/Surgeon preference

   ☐ Useable fistula or graft sites have been exhausted (check all subcategories that apply)
   - ○ At least one failed fistula exists
   - ○ A failed graft exists
   - ○ Fistula history uncertain

   ☐ Other _____
2. Had a catheter or port access been used exclusively for the past 90 days or longer ?
   ☐ Yes ☐ No ☐ Unknown

☐ Unknown

19. Did the patient FIRST start hemodialysis during January 1, 2006 - August 31, 2006 (see date #8 on page 1)? DO NOT **include patients who transferred from peritoneal dialysis, had a newly failed transplant, or returned after an episode of regained kidney function** (See instructions on page 6). ☐ **Yes (answer 19A-B)** ☐ **No**

A. What type of access was in use at the **Initiation** of a maintenance course of hemodialysis (First hemodialysis was during JAN 1, 2006 - AUG 31, 2006) ? ☐ AV Fistula ☐ Graft ☐ Catheter ☐ Port Access ☐ Unknown

B. What type of access was in use 90 days later ? ☐ AV Fistula ☐ Graft ☐ Catheter ☐ Port Access ☐ Unknown

IN-CENTER HEMODIALYSIS (HD) CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)	
INSTRUCTIONS FOR COMPLETING QUESTIONS 15 THROUGH 19 (Continued from page 1): To answer questions 15 through 19, review the patient's clinic or facility medical record for OCT 1, 2006 through DEC 31, 2006. Do not leave any items blank. Enter NF/NP if the information cannot be located.	
15A:	Enter the patient's first pre-dialysis hemoglobin (Hgb) for each month OCT, NOV, DEC 2006. Include the date the lab was drawn. If not found or not performed during the month, enter NF/NP.
15B.1:	Check the appropriate box to indicate if the patient had EPOETIN prescribed at any time during the 28 days BEFORE the date of the hemoglobin in 15A or had DARBEPOETIN (Aranesp) prescribed at any time during the 28 days BEFORE the date of the hemoglobin value in 15A.
15C:	Enter the patient's first pre-dialysis serum ferritin concentration for each month OCT, NOV, DEC 2006. Include the date the lab was drawn. If a serum ferritin concentration test was not found or not performed during the month, enter NF/NP.
15D:	Enter the patient's first pre-dialysis % transferrin saturation (TSAT) for each month OCT, NOV, DEC 2006. Include the date the lab was drawn. If a % transferrin saturation (TSAT) test was not found or not performed during the month, enter NF/NP.
15E:	Check either "Yes", "No", or "Unknown" to indicate if iron was prescribed at any time during the months of OCT, NOV, and DEC 2006. **If there was no prescription for iron go to question 16.**
15F:	If the answer to 15E is "Yes", please check the appropriate box to indicate the route of iron administration (intravenous [IV] or by mouth [PO]) for OCT, NOV, DEC 2006. If the patient received iron by mouth and IV during the month please check both boxes.
16A:	Enter the patient's first pre-dialysis serum calcium for each month OCT, NOV, DEC 2006. Include the date the lab was drawn. If a serum calcium was not found or not performed during the month, enter NF/NP.
16B:	Enter the patient's first pre-dialysis serum phosphorus for each month OCT, NOV, DEC 2006. Include the date the lab was drawn. If a serum phosphorus was not found or not performed during the month, enter NF/NP.
16C:	Enter the patient's first pre-dialysis serum albumin for each month OCT, NOV, DEC 2006. Include the date the lab was drawn. If a serum albumin was not found or not performed during the month, enter NF/NP.
16D:	Check the method used by the laboratory to determine the serum albumin value (bromcresol green or bromcresol purple). If you do not know what method the laboratory used, call the lab to find out this information.
17A:	Enter the number of times per week the patient was prescribed to receive dialysis in OCT, NOV, and DEC 2006. If the prescription varied during a month, enter the prescription in effect the week prior to when the pre- and post-BUNs were drawn. Do not leave this question blank.
17B & C:	Enter the patient's first pre- and post-dialysis BUNs for each month. Include the dates the labs were drawn. Both the pre- and post-dialysis BUN must be drawn on the same day. Enter NF/NP if not found or not performed during the month.
17D:	Enter the patient's pre- and post-dialysis weight at the dialysis session when the pre- and post-dialysis BUNs in questions 17B&C were drawn. Circle either lbs or kgs as appropriate.
17E:	Enter the patient's total treatment time (actual delivered time) on dialysis during the session when the BUNs in questions 17B&C were drawn for months OCT, NOV, DEC 2006. Do not enter the prescribed time on dialysis.
17F:	Enter the patient's first URR recorded on the lab sheet for each month OCT, NOV, DEC 2006. Include the date the lab was drawn. If not found or not performed during a month, enter NF/NP.
17G:	Enter the patient's first single-pool Kt/V recorded on the lab sheet for each month OCT, NOV, DEC 2006. Include the date the lab was drawn. If not found or not performed during a month, enter NF/NP.
17H:	Check the box to indicate the method used to calculate the single-pool Kt/V in 17G. If you do not know what method was used, please ask the unit's Medical Director. Please check the "Other" box if you do not use any of the methods listed. If using another method and you know what it is, please write the method in the space provided.

IN-CENTER HEMODIALYSIS (HD) CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)

18: Check only one type of vascular access used on **last hemodialysis session on or between OCT 1, 2006 and DEC 31, 2006** at the patient's primary in-center facility and then complete the corresponding questions to the right of the access type. Exclude dialysis sessions performed at temporary facilities because of holiday travel or hospitalizations. If a fistula and catheter are being used simultaneously for vascular access, the patient's access type should be considered catheter. ("Port Access" is considered a vascular access device which consists of a valve and cannula that is subcutaneously implanted and is accessed by dialysis needles).

AV Fistula or Graft:

If the vascular access marked for question 18 was an AV fistula or graft (with or without AV fistula) indicate if routine surveillance for the presence of stenosis between Oct 1, 2006 and Dec 31, 2006 was done. Routine surveillance is the sequential measurement of access flow OR of venous pressure.

- Indicate **"Yes"** for this question if you measure access flow OR venous pressure using any of the following:
  Techniques and frequencies used to measure access flow include:
  a. one of the dilution methods in which the needles are reversed and recirculation is deliberately induced on a regular basis, **OR**
  b. conventional Color-Flow Doppler at a minimum of once every three months.

  Techniques and frequencies used to measure venous pressure include:
  a. dynamic venous pressure at every hemodialysis session; uses low blood pump rates usually set at 200 mL/min., **OR**
  b. static venous pressure measured at a minimum of once every two weeks; performed at zero blood pump flow.
- Indicate **"No"** for this question if you only conduct (or note) the following clinical assessments:
  a. Prolonged bleeding after needle withdrawal.
  b. Altered characteristics of thrill or bruit.
  c. Adequacy measurements using Kt/V or URR.
  d. Recirculation methods.

Continue with question 2 if answered "yes" above and check all surveillance methods utilized based on the definitions and intervals given above. If other techniques and/or corresponding intervals were used check "other" and write in the technique and corresponding intervals.

Continue with question 3 and answer "yes" if patient had a catheter or port access that was being used previously for hemodialysis but had not been removed on last hemodialysis session on or between 10/1/2006 and 12/31/2006.

Catheter or Port Access:
If the vascular access marked for question 18 was a catheter or port access, indicate in the appropriate space the **reason for the catheter or port access.**

Continue with question 2 and indicate in the appropriate space **if one or more catheters or port accesses** had been used **continuously** in this patient for the past **90 days or longer** between OCT 1, 2006 and DEC 31, 2006.

Unknown:
If the vascular access in question 18 is unknown indicate by checking the "unknown" box and then continue to question 19.

19: Check the appropriate space to indicate if the patient FIRST started hemodialysis during January 1, 2006 - August 31, 2006 (see date #8 on page 1). These patients would have begun a regular maintenance course of hemodialysis during January 1, 2006 - August 31, 2006. **DO NOT** include patients who have transferred from peritoneal dialysis, had a newly failed transplant, or returned after an episode of regained kidney function, and were placed on maintenance hemodialysis during the time frame January 1, 2006 - August 31, 2006. If "Yes", answer questions 19A-B. If "No", questions 19A-B should be left blank and the form has been completed.

19A: Check the appropriate space to indicate type of vascular access in use upon **Initiation** of a maintenance course of hemodialysis. Patient's FIRST hemodialysis would be during the time frame January 1, 2006 - August 31, 2006. Exclude patients who have received intermittent dialysis treatments for volume overload or congestive heart failure. ("Port Access" is considered a vascular access device which consists of a valve and cannula that is subcutaneously implanted and is accessed by dialysis needles)

19B: Check the appropriate space to indicate type of vascular access, for the patient identified in 19A, **in use 90 days after** the patient first started hemodialysis. ("Port Access" is considered a vascular access device which consists of a valve and cannula that is subcutaneously implanted and is accessed by dialysis needles).

PERITONEAL DIALYSIS CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007

[Before completing please read instructions at the bottom of this page and on pages 5 and 6]

PATIENT IDENTIFICATION		MAKE CORRECTIONS TO PATIENT INFORMATION ON LABEL IN THE SPACE BELOW
1. ,	2. / /	
3.	4.	
5.	6.	
7.	8. / /	
9.	10.	
	11. / /	

12. If this patient is unknown or was not dialyzed in the facility at any time during OCT 2006 - MAR 2007 return the blank form to the Network.

13. Patient's Ethnicity (Check appropriate box). ☐ Not Hispanic or Latino

☐ Hispanic or Latino: Please specify country/area of origin or ancestry 0

14a. Patient's height (MUST COMPLETE): _____ inches **OR** _____ centimeters

(only for patients < 18 years old, provide date when height was measured: / /)

14b. Patient's weight (abdomen empty) (first clinic visit weight after Sept 30, 2006): _____.__ lbs **OR** _____.__ kgs

Individual Completing Form (Please print):

First name: Last Name: Title:

Phone number: ( ) - Fax Number: ( ) -

INSTRUCTIONS FOR COMPLETING THE PERITONEAL DIALYSIS CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007

The label on the top left side of this form contains the following patient identifying information (#'s 1-11). If the information is incorrect make corrections to the right of the label.

1. LAST and first name
3. Social Security Number (SSN)
5. GENDER (1=Male; 2=Female)
7. PRIMARY cause of renal failure by CMS-2728 code
9. ESRD Network number - Do not make corrections to this item.
2. DATE of birth (DOB) as MM/DD/YYYY
4. HEALTH Insurance Claim Number (HIC), **(same as Medicare number)**
6. RACE, check all that apply (1=American Indian/Alaska Native; 2=Asian; 3=Black or African American; 4=White; 6=Native Hawaiian or Other Pacific Islander)
8. DATE, as MM/DD/YYYY, that the patient FIRST began a regular course of dialysis
10. Facility's Medicare provider number
11. The most RECENT date this patient returned to peritoneal dialysis following: transplant failure, an episode of regained kidney function, or switched modality.

12. If the patient is unknown or if the patient was not dialyzed in the facility at any time during OCT 2006 through MAR 2007, send the blank form back to the ESRD Network office. Provide the name and address of the facility providing services to this patient on December 31, 2006, if known.
13. Patient's Ethnicity. Please verify the patient's ethnicity with the patient and check appropriate box. If "Hispanic or Latino" is checked, please specify country/area of origin or ancestry.

14a. Enter the patient's height in inches or centimeters. HEIGHT MUST BE ENTERED, do not leave this field blank. You may ask the patient his/her height to obtain this information. If the patient had both legs amputated, record pre-amputation height.

14b. Enter the patient's weight (abdomen empty) in pounds or kilograms. Use the FIRST CLINIC VISIT weight on or after September 30, 2006. If abdomen is not empty for weight, subtract the weight of the fill fluid from the measured patient weight.

PLEASE COMPLETE ITEMS 15 AND 16 ON PAGE 2, ITEMS 17 AND 18 ON PAGE 3, AND ITEMS 19 AND 20 ON PAGE 4.
INSTRUCTIONS FOR COMPLETING THESE ITEMS ARE ON PAGES 5 AND 6.

PERITONEAL DIALYSIS CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)

15. ANEMIA MANAGEMENT: For each lab question below, enter the first lab value obtained for each two month time period: OCT-NOV 2006, DEC 2006- JAN 2007, FEB-MAR 2007. Include the date each lab was drawn. Enter NF/NP if the lab value cannot be located.

	OCT - NOV 2006	DEC 2006 - JAN 2007	FEB - MAR 2007
A. First laboratory hemoglobin (HGB) during the two month time period:	___ ___ . ___ g/dL Date: ___/___/_____ (If NF/NP go to 15C)	___ ___ . ___ g/dL Date: ___/___/_____ (If NF/NP go to 15C)	___ ___ . ___ g/dL Date: ___/___/_____ (If NF/NP go to 15C)
B.1.a. Did the patient have Epoetin prescribed at any time during the 28 days before the Hgb in 15A was drawn ?	Epoetin ☐ Yes ☐ No ☐ Unknown	Epoetin ☐ Yes ☐ No ☐ Unknown	Epoetin ☐ Yes ☐ No ☐ Unknown
B.1.b. Did the patient have Darbepoetin (Aranesp) prescribed at any time during the 28 days before the Hgb in 15A was drawn ?	Darbepoetin ☐ Yes ☐ No ☐ Unknown	Darbepoetin ☐ Yes ☐ No ☐ Unknown	Darbepoetin ☐ Yes ☐ No ☐ Unknown
C. First serum ferritin concentration during the two month time period:	___ ___ ___ ___ ng/mL Date: ___/___/_____	___ ___ ___ ___ ng/mL Date: ___/___/_____	___ ___ ___ ___ ng/mL Date: ___/___/_____
D. First % transferrin saturation (TSAT) during the two month time period:	___ ___ ___ % Date: ___/___/_____	___ ___ ___ % Date: ___/___/_____	___ ___ ___ % Date: ___/___/_____
E. Was iron prescribed at any time during the two month time period ?	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown
F. If yes, what was the prescribed route of iron administration ? (Check all that apply).	☐ IV ☐ PO ☐ Unknown	☐ IV ☐ PO ☐ Unknown	☐ IV ☐ PO ☐ Unknown

16. MINERAL METABOLISM MANAGEMENT: Enter the first serum calcium, phosphorus, and albumin obtained for each two month period: OCT-NOV 2006, DEC 2006-JAN 2007, FEB-MAR 2007. Include the date each lab was drawn. Enter NF/NP if the lab value cannot be located. Check the method used (16D) (BCG [bromcresol green] or BCP [bromcresol purple]) by the lab to determine serum albumin. If the lab method is unknown, please call lab to find out.

	OCT - NOV 2006	DEC 2006 - JAN 2007	FEB - MAR 2007
A. First serum calcium during the two month time period. Drawn on the same date as 16C:	___ ___ . ___ mg/dL Date: ___/___/_____	___ ___ . ___ mg/dL Date: ___/___/_____	___ ___ . ___ mg/dL Date: ___/___/_____
B. First serum phosphorus during the two month time period. Drawn on the same date as 16C:	___ ___ . ___ mg/dL Date: ___/___/_____	___ ___ . ___ mg/dL Date: ___/___/_____	___ ___ . ___ mg/dL Date: ___/___/_____
C. First serum albumin during the two month time period.	___ . ___ gm/dL Date: ___/___/_____	___ . ___ gm/dL Date: ___/___/_____	___ . ___ gm/dL Date: ___/___/_____
D. Check lab method used: BCG = bromcresol green BCP = bromcresol purple	☐ BCG ☐ BCP	☐ BCG ☐ BCP	☐ BCG ☐ BCP

PERITONEAL DIALYSIS CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)	
17. PD ADEQUACY: The following data are requested for the FIRST PD ADEQUACY determination during the months OCT 2006 through MAR 2007. Starting with the first adequacy measurement in these months, enter the adequacy measurements/results listed below that were obtained. (Please DO NOT record more than one adequacy measurement done for any one month.) Please read the instructions on Page 5 & 6 before completing this section. Enter NF/NP if information cannot be located.	
17. Was PD adequacy measurement done between 10-1-2006 and 3-31-2007 ?	☐ Yes ☐ No ☐ Unknown
17A. Date of FIRST PD adequacy measurement between 10-1-2006 and 3-31-2007	____ / ____ / _____ (mm) (dd) (yyyy)
17B. Patient's dialysis modality when adequacy measures were performed	☐ CAPD ☐ Cycler (See definitions in instructions on page 5)
17B.1 If Cycler, does the prescription include TIDAL dialysis ?	☐ Yes ☐ No ☐ Unknown
17C. Patient's weight at the time of this adequacy assessment (abdomen empty) (Circle lbs or kgs)	_____ . __ lbs / kgs
17D. Weekly Kt/V urea (dialysate and urine clearance)	___ . ___ ___
17E. Method by which V above was calculated: Check one. (If unknown please call lab.)	☐ %BW ☐ Hume ☐ Watson ☐ Other _____
17F. Is Creatinine Clearance corrected for body surface area, using standard methods ? (See instructions on page 6)	☐ Yes ☐ No ☐ Unknown
17G. Weekly Creatinine Clearance (dialysate and urine clearance)	___ ___ ___ . ___ L/wk or ___ ___ ___ . ___ L/wk/1.73m²
17H. 24 hr DIALYSATE **volume** (prescribed and ultrafiltration)	___ ___ ___ ___ ___ mL
17I. 24 hr DIALYSATE **urea nitrogen:**	___ ___ ___ . ___ mg/dL
17J. 24 hr DIALYSATE **creatinine:**	___ ___ . ___ mg/dL
17K. 24 hr URINE **volume:** (If 24 hr urine was not located check NF/NP.)	___ ___ ___ ___ mL ☐ NF/NP
17L. 24 hr URINE **urea nitrogen:**	___ ___ ___ . ___ mg/dL
17M. 24 hr URINE **creatinine:**	___ ___ ___ . ___ mg/dL
17N. SERUM BUN at the time this PD adequacy assessment was done	___ ___ ___ mg/dL
17O. SERUM creatinine at the time this PD adequacy assessment was done	___ ___ . ___ mg/dL
17P.1. Most recent 4 hour dialysate/plasma creatinine ratio (D/P Cr) from a peritoneal equilibration test (PET). (May be outside of 6-month collection time frame) 2. Date of most recent D/P Cr	___ . ___ ___ ____ / ____ / _____ (mm) (dd) (yyyy)
18. PERITONEAL DIALYSIS PRESCRIPTION: For the following question - record if the PD prescription in effect at the time the adequacy measures/results recorded in Question 17 was changed. Please read instructions on Page 6 before completing this section.	
18. Based on the adequacy results from questions 17A - 17O, was the prescription changed following the FIRST PD adequacy measurement performed between OCT 1, 2006 and MAR 31, 2007.	☐ Yes ☐ No ☐ Unknown

PERITONEAL DIALYSIS CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)	
19. PD ADEQUACY: The following data are requested for the SECOND PD ADEQUACY determination during the months NOV 2006 through MAR 2007. Starting with the second adequacy measurement in these months, enter the adequacy measurements/results listed below that were obtained. (Please DO NOT record more than one adequacy measurement done for any one month.) Please read the instructions on Page 6 before completing this section. Enter NF/NP if information cannot be located.	
19. Was SECOND PD adequacy measurement done between 11-1-2006 and 3-31-2007 ?	☐ Yes ☐ No ☐ Unknown
19A. Date of SECOND PD adequacy measurement between 11-1-2006 and 3-31-2007	____ / ____ / _____ (mm) (dd) (yyyy)
19B. Patient's dialysis modality when adequacy measures were performed	☐ CAPD ☐ Cycler (See definitions in instructions on page 5)
19B.1 If Cycler, does the prescription include TIDAL dialysis ?	☐ Yes ☐ No ☐ Unknown
19C. Patient's weight at the time of this adequacy assessment (abdomen empty) (Circle lbs or kgs)	_____ . __ lbs / kgs
19D. Weekly Kt/V urea (dialysate and urine clearance)	__ . __ __
19E. Method by which V above was calculated: Check one. (If unknown please call lab.)	☐ %BW ☐ Hume ☐ Watson ☐ Other _____
19F. Is Creatinine Clearance corrected for body surface area, using standard methods ? (See instructions on page 6)	☐ Yes ☐ No ☐ Unknown
19G. Weekly Creatinine Clearance (dialysate and urine clearance)	__ __ __ . __ L/wk or __ __ __ . __ L/wk/1.73m²
19H. 24 hr DIALYSATE **volume** (prescribed and ultrafiltration)	__ __ __ __ __ mL
19I. 24 hr DIALYSATE **urea nitrogen:**	__ __ __ . __ mg/dL
19J. 24 hr DIALYSATE **creatinine:**	__ __ . __ mg/dL
19K. 24 hr URINE **volume:** (If 24 hr urine was not located check NF/NP.)	__ __ __ __ mL ☐ NF/NP
19L. 24 hr URINE **urea nitrogen:**	__ __ __ . __ mg/dL
19M. 24 hr URINE **creatinine:**	__ __ __ . __ mg/dL
19N. SERUM BUN at the time this PD adequacy assessment was done	__ __ __ mg/dL
19O. SERUM creatinine at the time this PD adequacy assessment was done	__ __ . __ mg/dL
19P. If the patient has had a 4-Hour D/P Cr performed from a PET since the time of the first adequacy test, during the 6 month collection time frame, enter the value and the date the test was performed. If not performed, enter NP.	__ . __ __ ____ / ____ / _____ (mm) (dd) (yyyy)
20. PERITONEAL DIALYSIS PRESCRIPTION: For the following question - record if the PD prescription in effect at the time the adequacy measures/results recorded in Question 19 was changed. Please read instructions on Page 6 before completing this section.	
20. Based on the adequacy results from questions 19A - 19O, was the prescription changed following the SECOND PD adequacy measurement performed between NOV 1, 2006 and MAR 31, 2007.	☐ Yes ☐ No ☐ Unknown

PERITONEAL DIALYSIS CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)	
INSTRUCTIONS FOR COMPLETING QUESTIONS 15 AND 16 (Continued from page 1): To answer questions 15 and 16, review the patient's clinic or facility medical record FOR EACH TWO MONTH TIME PERIOD: OCT 1, 2006 through NOV 30, 2006, DEC 1, 2006 through JAN 31, 2007, and FEB 1, 2007 through MAR 31, 2007. Do not leave any items blank. Enter NF/NP if the information cannot be located.	
15A:	Enter the patient's FIRST hemoglobin (Hgb) value determined by the laboratory for EACH two-month time period. Include the date the lab was drawn. If not found or not performed during the two-month time period, enter NF/NP.
15B.1:	Check the appropriate box to indicate if the patient had a prescription for EPOETIN or DARBEPOETIN (Aranesp) at any time during the 28 days BEFORE the date of the hemoglobin value in 15A.
15C:	Enter the patient's FIRST serum ferritin concentration recorded EACH two-month time period. Include the date the lab was drawn. If a serum ferritin concentration test was not found or not performed every two-month time period, enter the value for the time period when performed and record NF/NP for the other time period(s).
15D:	Enter the patient's FIRST % transferrin saturation (TSAT) recorded EACH two-month time period. Include the date the lab was drawn. If a % transferrin saturation (TSAT) test was not found or not performed every two-month time period, enter the value for the time period when performed and record NF/NP for the other time period(s).
15E:	Check either "Yes", "No", or "Unknown" to indicate if iron was prescribed at any time during the two-month time periods.
15F:	If the answer to 15E is "Yes", please check the appropriate box to indicate the route of iron administration (intravenous [IV] or by mouth [PO]) for each two-month time period. Check every route of administration that was prescribed each time period.
16A:	Enter the patient's FIRST serum calcium recorded EACH two-month time period. Include the date the lab was drawn.
16B:	Enter the patient's FIRST serum phosphorus recorded EACH two-month time period. Include the date the lab was drawn.
16C:	Enter the patient's FIRST serum albumin recorded EACH two-month time period. Include the date the lab was drawn. was drawn. If a serum albumin was not found or not performed during the month, enter NF/NP.
16D:	Check the method used by the laboratory to determine the serum albumin value (bromcresol green or bromcresol purple). If you do not know what method the laboratory used, call the lab to find out this information.
INSTRUCTIONS FOR COMPLETING QUESTIONS 17 THROUGH 20: To answer questions 17 through 20 review the patient's clinic or facility medical record and provide the requested data for each of the first two adequacy measurements and PD prescriptions in effect at the time the adequacy measurements were done during the months OCT 2006 through MAR 2007. DO NOT record more than one adequacy measurement done for any one month.	
17.	Check "Yes", "No", or "Unknown" to indicate if a PD adequacy measurement was done between OCT 1, 2006 and MAR 31, 2007.
17A:	Enter the first date on which PD adequacy of dialysis was accessed for the first measure obtained between OCT 1, 2006 and MAR 31, 2007. DO NOT record more than one PD adequacy measurement done for any one month.
17B:	Check the modality of peritoneal dialysis this patient was on at the time the corresponding adequacy of dialysis measure was obtained. CHECK either CAPD or Cycler. CAPD includes patients with one overnight exchange using an assist device. Cycler includes patients using an automated device for exchanges.
17B.1:	If answer to 17B is cycler, check "Yes", "No", or "Unknown" to indicate whether this patient's peritoneal dialysis prescription included TIDAL dialysis. TIDAL patients are cycler patients for whom the dialysate is partially drained between some exchanges.
17C:	Enter the patient's weight (with abdomen empty) at the clinic/facility visit when the adequacy measurements were obtained, circle lbs or kgs as appropriate. If abdomen is not empty for weight, subtract the weight of the fill fluid from the measured patient weight.

PERITONEAL DIALYSIS CLINICAL PERFORMANCE MEASURES DATA COLLECTION FORM 2007 (CONTINUED)
17D: Enter the TOTAL WEEKLY Kt/V urea for the first adequacy measurement indicated on 17A between OCT 1, 2006 and MAR 31, 2007. NOTE: Whether or not you have a value for weekly Kt/V urea for this adequacy assessment, please complete the corresponding values for questions 17H-17I for 24-hour dialysate volume, 24-hour dialysate urea nitrogen and question 17K for 24-hour urine volume. If the patient is not anuric, complete the corresponding value for question 17L, the 24-hour urine urea nitrogen, if this value is available. Enter NF/NP for all values when not found or not performed. If your unit calculates a daily Kt/V urea, multiply this result by 7.0 and enter the result in the appropriate space(s). If this patient did not dialyze each day of the week, then multiply the daily Kt/V urea by the number of days the patient did dialyze.
17E: Check the method used to calculate the V in the Kt/V urea measurement; %BW - percent of body weight; Hume and Watson are two nomograms used to calculate V based on several of these parameters - weight, height, age, gender. If method used to calculate V is not known, please call lab to ascertain method. Please do not leave blank.
17F: Check Yes or No if the weekly creatinine clearance was normalized for body surface area (i.e., the result is multiplied by $1.73m^2$ and divided by the patient's body surface area [BSA]). Standard methods for establishing BSA are: the DuBois and DuBois method; the Gehan and George method; and the Haycock method. If you do not have this information, call the laboratory that provided the creatinine clearance value for this information. Please do not leave blank.
17G: Enter the TOTAL WEEKLY CREATININE CLEARANCE for the first adequacy measurement indicated on 17A between OCT 1, 2006 and MAR 31, 2007. NOTE: Whether or not you have a value for weekly creatinine clearance for this adequacy assessment, please complete the corresponding values for questions 17H and 17I for 24-hour dialysate volume, 24-hour dialysate creatinine and question 17K for 24-hour urine volume. If the patient is not anuric, complete the corresponding value for question 17M, the 24-hour urine creatinine, if this value is available. Enter NF/NP for all values when not found or not performed. If your unit calculates a daily creatinine clearance multiply this result by 7.0 and enter the result in the appropriate space(s). If this patient did not dialyze each day of the week, then multiply the daily creatinine clearance by the number of days the patient did dialyze.
17H, I, and J: Enter the measured 24-hour DIALYSATE volume (includes prescribed and ultrafiltration volumes), urea nitrogen and creatinine obtained for the first adequacy measurement obtained between OCT 1, 2006 and MAR 31, 2007. If a 24-hour dialysate volume, urea nitrogen or creatinine were NOT measured in this time period, enter NF/NP (for not found or not performed) in the appropriate spaces. ONLY ENTER ACTUAL MEASURED 24-HOUR DIALYSATE VOLUME. DO NOT ENTER AN EXTRAPOLATED DIALYSATE VOLUME. Please report the 24-hour dialysate volume as a combination of the prescribed fill volume and the ultrafiltration volume.
17K, L, and M: Enter the 24-hour URINE volume, urea nitrogen and creatinine obtained for the first adequacy assessment obtained between OCT 1, 2006 and MAR 31, 2007. ONLY ENTER ACTUAL MEASURED 24-HOUR URINE VOLUME - DO NOT ENTER AN EXTRAPOLATED URINE VOLUME. If 24-hour urine volume was not collected check NF/NP for not found or not performed. If NF/NP is checked, SKIP TO QUESTION 17N. If urine urea nitrogen and creatinine were not found or not measured in this time period, enter NF/NP in the appropriate spaces.
17N, O: Enter the SERUM BUN and SERUM CREATININE obtained for the first PD adequacy assessment obtained between OCT 1, 2006 and MAR 31, 2007. Enter NF/NP in the appropriate spaces for all time periods when not found or not performed
17P: (1) Enter the most recent 4 hour dialysate/plasma creatinine ratio (D/P Cr) from a peritoneal equilibration test (PET). (2) Enter the date of the most recent D/P Cr. The test result and corresponding date of the most recent D/P Cr may be outside the 6-month study period. If never found or performed record NF/NP. Date cannot be after 3/31/07 or prior to the first day of peritoneal dialysis.
18: Check "Yes", "No", or "Unknown", indicating whether the PD prescription changed following the first PD adequacy measurement performed between OCT 1, 2006 and MAR 31, 2007.
19: Check "Yes", "No", or "Unknown", to indicate if a PD adequacy measurement was done between NOV 1, 2006 and MAR 31, 2007.
19A-O: See instructions for 17A-17O and complete for SECOND PD adequacy measurement performed between NOV 1, 2006 and MAR 31, 2007. DO NOT record more than one PD adequacy measurement done for any one month.
19P: Record the value and date of the patient's PET if a new one was performed since the time of the first adequacy test during this 6-month collection time frame. If not performed enter NP.
20. Check "Yes", "No", or "Unknown", indicating whether the PD prescription changed following the SECOND PD adequacy measurement performed between NOV 1, 2006 and MAR 31, 2007.

APPENDIX 5

2007 NATIONAL CPM DATA COLLECTION – NATIONAL AND NETWORK PROFILES
for Adult (aged ≥ 18 years) In-Center Hemodialysis Patients

Network	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	U.S.
# Patients in sample	484	486	487	485	488	490	483	488	484	479	481	476	487	485	487	480	495	495	**8740**
# Facilities in sample	138	178	130	196	219	295	212	224	243	154	236	188	200	266	177	117	147	198	**3518**
DIALYSIS ADEQUACY																			
% Pts with mean single session spKt/V ≥ 1.2	95	91	92	91	89	91	88	91	91	89	89	91	88	95	91	89	87	87	**90**
Median spKt/V	1.56	1.55	1.56	1.58	1.52	1.54	1.54	1.53	1.57	1.59	1.53	1.53	1.49	1.62	1.57	1.58	1.50	1.53	**1.55**
% Pts with mean URR ≥ 65%	91	88	88	88	87	86	85	88	89	87	85	88	85	91	88	89	83	84	**87**
Median URR %	74	73	74	74	73	73	73	73	73	74	73	73	72	74	73	74	72	73	**73**
Median dialysis session length (min)	210	210	211	225	210	216	210	220	225	215	210	215	216	233	215	229	198	196	**213**
VASCULAR ACCESS																			
% Prevalent Pts with AVF^	57	47	44	43	38	41	44	42	44	42	40	45	36	42	55	61	53	51	**45**
% Incident Pts with AVF	54	43	38	34	38	32	40	47	52	29	34	36	36	44	43	56	43	42	**41**
% Prevalent Pts with Graft with AVF	*	*	*	*	2	3	*	*	*	*	*	*	*	*	*	*	3	3	**2**
% Prevalent Pts with Graft without AVF	15	25	20	23	29	30	22	31	22	24	23	21	26	32	13	15	22	26	**24**
% Pts with AVG and stenosis monitoring	58	55	73	73	66	77	57	61	70	71	72	60	63	72	72	99	78	77	**70**
% Prevalent Pts with catheter	27	27	35	32	30	26	33	25	32	33	35	32	36	24	30	22	23	20	**29**
% Prevalent Pts with catheter ≥ 90 days	20	20	26	26	23	20	26	17	26	24	26	25	29	18	23	16	17	18	**22**

* Value suppressed because n < 11
^ CMS has set a goal to have ≥ 66% of prevalent hemodialysis patients using an AV Fistula as their access by the year 2010.

APPENDIX 5 **2007 NATIONAL CPM DATA COLLECTION – NATIONAL AND NETWORK PROFILES (CONT.)**
for Adult (aged ≥ 18 years) In-Center Hemodialysis Patients

Network	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	U.S.
ANEMIA MANAGEMENT																			
Median Hgb (g/dL)	11.9	12.0	12.0	12.0	12.1	12.1	12.0	11.9	11.9	12.0	12.1	11.9	12.0	12.1	12.2	12.1	12.1	12.1	**12.1**
% Pts with mean Hgb ≥ 11 g/dL	83	84	83	82	82	84	82	79	83	81	85	81	83	86	86	87	85	85	**84**
% Pts^ with mean Hgb 11-12.0	36	32	34	34	32	31	30	33	38	31	35	35	33	33	33	35	33	30	**33**
% Pts with mean Hgb < 10 g/dL	5	6	8	5	7	4	6	7	3	7	5	6	5	5	3	4	4	3	**5**

^ Excludes pts. with mean Hgb > 12 g/dL (120 g/L) who are not prescribed ESA at anytime during the study period.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.

IRON MANAGEMENT																			
% Pts with mean TSAT ≥ 20%	80	79	76	78	82	80	82	78	78	78	79	73	81	82	77	74	78	79	**79**
Median TSAT %	26	26	26	26	27	26	27	25	25	26	26	25	26	27	26	24	26	27	**26**
% Pts with mean Ferritin ≥ 100 ng/mL	95	91	95	94	94	93	93	95	95	96	96	96	96	97	93	93	94	96	**95**
Median ferritin ng/mL	534	466	523	538	529	539	530	476	536	493	481	500	556	520	476	445	536	564	**529**
% Pts prescribed IV Iron	68	65	71	71	63	69	69	72	72	75	72	72	73	72	65	72	64	68	**70**

APPENDIX 5 **2007 NATIONAL CPM DATA COLLECTION – NATIONAL AND NETWORK PROFILES (cont.)**
for Adult (aged ≥ 18 years) In-Center Hemodialysis Patients

Network	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	U.S.
ALBUMIN																			
% Pts with mean serum alb ≥ 4.0/3.7 g/dL (BCG/BCP)^^	31	34	30	30	36	34	34	31	31	37	29	27	34	34	36	34	40	40	**34**
% Pts with mean serum alb ≥ 3.5/3.2 g/dL (BCG/BCP)^^	79	77	80	78	82	83	82	83	77	86	75	76	80	82	86	82	81	84	**81**
Median serum BCG albumin (g/dL)	3.8	3.9	3.8	3.8	3.9	3.8	3.9	3.9	3.8	3.9	3.8	3.8	3.8	3.9	3.8	3.9	3.9	3.9	**3.8**
Median serum BCP albumin (g/dL)	3.5	3.4	3.4	3.3	3.6	3.9	3.4	3.4	3.7	3.6	3.7	3.3	3.9	3.6	3.8	3.4	3.6	3.6	**3.5**

^^ BCG/BCP - Bromcresol Green/Bromcresol Purple Laboratory Methods
* Value suppressed because n < 11
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.

CALCIUM																			
Median Calcium	9.2	9.2	9.3	9.4	9.3	9.4	9.4	9.3	9.3	9.2	9.3	9.2	9.3	9.3	9.2	9.2	9.2	9.2	**9.3**
% Pts with adjusted calcium 8.4 - 10.2 (mg/dL)	82	83	84	83	82	83	85	83	83	84	86	82	84	83	80	81	85	85	**83**
% Pts with monthly calcium reported	89	93	87	89	82	88	83	89	89	89	91	90	88	92	89	86	91	92	**89**
PHOSPHORUS																			
Median Phosphorus	5.2	5.2	5.3	5.0	5.2	5.4	5.3	5.4	5.3	5.3	5.1	5.1	5.3	5.4	5.4	5.2	5.3	5.4	**5.2**
% Pts with mean phosphorus 3.5 - 5.5 (mg/dL)	55	52	49	58	51	51	53	48	53	52	57	56	52	48	51	54	52	50	**52**
% Pts with monthly phosphorus reported	89	92	87	89	82	88	83	88	90	89	91	91	88	92	88	87	90	91	**89**

Note: To convert calcium conventional units of mg/dL to SI units (mg/L), multiply by 10.
Note: To convert phosphorus conventional units of mg/dL to SI units (mg/L), multiply by 10.

Appendix 6. 2007 ESRD Outcome Comparison Tool —Adult In-Center Hemodialysis Patients — National Data are from October - December 2006

Enter your Network data from Appendix 5 and use this tool to document and compare your facility outcomes to the national data and your Network data.

	U.S.	Network	Facility
ADEQUACY OF DIALYSIS			
Percent of patients with a mean spKt/V ≥ 1.2	90%		
Mean ± SD spKt/V	1.55 ± 0.27		
Mean ± SD dialysis session length (minutes)	217 ± 32		
Mean ± SD URR (%)	72.0 ± 7		
VASCULAR ACCESS			
Percent of prevalent patients dialyzed with an AV fistula^	45%		
Percent of incident patients dialyzed with an AV fistula	41%		
Percent of prevalent patients dialyzed with an AV Graft^^	26%		
Percent of prevalent patients dialyzed with a catheter	29%		
Percent of prevalent patients dialyzed with a catheter ≥ 90 days	22%		
ANEMIA MANAGEMENT			
Percent of patients with mean Hgb ≥ 11.0 g/dL	84%		
Percent of patients^^^ with mean Hgb 11.0 – 12.0 g/dL	33%		
Percent of patients with mean Hgb < 10.0 g/dL	5%		
Mean ± SD Hgb (g/dL)	12.0 ± 1.2		
Percent of patients with mean TSAT ≥ 20%	79%		
Mean ± SD TSAT (%)	28 ± 11.2		
Percent of patients with mean serum ferritin concentration ≥ 100 ng/mL	95%		
Mean ± SD serum ferritin concentration (ng/mL)	583 ± 387		
Percent of patients prescribed IV iron	70%		
SERUM ALBUMIN			
Percent of patients with mean serum albumin ≥ 4.0/3.7 g/dL (BCG/BCP)	34%		
Percent of patients with mean serum albumin ≥ 3.5/3.2 g/dL (BCG/BCP)	81%		
Mean ± SD serum albumin (g/dL)			
BCG	3.8 ± 0.4		
BCP	3.5 ± 0.5		
CALCIUM			
Percent of patients with adjusted calcium 8.4 – 10.2 mg/dL	83%		
Percent of patients with monthly calcium reported	89%		
Mean ± SD calcium (mg/dL)	9.2 ± 0.7		
PHOSPHORUS			
Percent of patients with mean phosphorus 3.5 – 5.5 mg/dL	52%		
Percent of patients with monthly phosphorus reported	89%		
Mean ± SD phosphorus (mg/dL)	5.4 ± 1.5		

^ CMS has set a goal to have ≥ 66% of prevalent hemodialysis patients using an AV Fistula as their access by the year 2010.
^^ Includes grafts with and without AVF.
^^^ Excludes pts. with mean Hgb > 12 g/dL (120 g/L) who are not prescribed ESA at anytime during the study period.
Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert calcium conventional units of mg/dL to SI units (mg/L), multiply by 10.
Note: To convert phosphorus conventional units of mg/dL to SI units (mg/L), multiply by 10.

Appendix 7. 2007 ESRD Outcome Comparison Tool —Adult Peritoneal Dialysis Patients — National Data are from October 2006 - March 2007

Use this tool to document and compare your facility outcomes to the national data.

	U.S.	Facility
ADEQUACY OF DIALYSIS^		
Percent of patients measured for adequacy at least once during the six month study period (both weekly Kt/V_{urea} and weekly creatinine clearance measured)	84%	
Percent of peritoneal dialysis patients with mean weekly Kt/V_{urea} ≥ 1.7	85%	
Mean ± SD weekly Kt/V_{urea} for CAPD patients	2.31 ± 0.65	
Mean ± SD weekly Kt/V_{urea} for Cycler patients^^	2.22 ± 0.64	
Mean ± SD weekly Kt/V_{urea} for all peritoneal dialysis patients	2.24 ± 0.64	
ANEMIA MANAGEMENT		
Percent of patients with mean Hgb ≥ 11.0 g/dL	82%	
Percent of patients^^^ with mean Hgb 11.0 - 12.0 g/dL	35%	
Percent of patients with mean Hgb < 10.0 g/dL	6%	
Mean ± SD Hgb (g/dL)	12.0 ± 1.3	
Percent of patients with mean TSAT ≥ 20%	85%	
Mean ± SD TSAT (%)	30 ± 11	
Percent of patients with mean serum ferritin concentration ≥ 100 ng/mL	90%	
Mean ± SD serum ferritin concentration (ng/mL)	477 ± 398	
Percent of patients prescribed IV iron	29%	
SERUM ALBUMIN		
Percent of patients with mean serum albumin ≥ 4.0/3.7 g/dL (BCG/BCP)	19%	
Percent of patients with mean serum albumin ≥ 3.5/3.2 g/dL (BCG/BCP)	63%	
Mean ± SD Serum Albumin (g/dL) BCG	3.6 ± 0.5	
Mean ± SD Serum Albumin (g/dL) BCP	3.3 ± 0.6	
CALCIUM		
Percent of patients with adjusted calcium 8.4 - 10.2 mg/dL	79%	
Percent of patients with monthly calcium reported	84%	
Mean ± SD calcium (mg/dL)	9.4 ± 0.8	
PHOSPHORUS		
Percent of patients with mean phosphorus 3.5 - 5.5 mg/dL	56%	
Percent of patients with monthly phosphorus reported	83%	
Mean ± SD phosphorus (mg/dL)	5.2 ± 1.4	

^ Using the 2006 KDOQI guidelines and recommendations (29): For peritoneal dialysis patients with and without renal kidney function: weekly KtV_{urea} ≥ 1.7.

^^ For the Oct 2006-Mar 2007 collection, CCPD and NIPD were not distinguishable.

^^^ Excludes pts. with mean Hgb > 12 g/dL (120 g/L) who are not prescribed ESA at anytime during the study period.

Note: To convert hemoglobin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert serum albumin conventional units of g/dL to SI units (g/L), multiply by 10.
Note: To convert calcium conventional units of mg/dL to SI units (mg/L), multiply by 10.
Note: To convert phosphorus conventional units of mg/dL to SI units (mg/L), multiply by 10.