Results of 1998 Validation Study: Analysis of Concurrence Between Core Indicators Data Abstracted by Dialysis Facility Staff and ESRD Network Staff

Special Report # A

1998 ESRD Core Indicators Project

The Health Care Financing Administration February 1999

Background

In 1994 the Health Care Financing Administration (HCFA), in collaboration with the ESRD Networks and the renal community, began demonstrating a new approach to assessing and improving health care provided to Medicare ESRD patients - the ESRD Health Care Quality Improvement Program (HCQIP). The key goal of this approach is to increase to the highest possible level the number of ESRD patients who receive care consistent with current standards of care.

The first activity conducted as part of the ESRD HCQIP was the ESRD Core Indicators Project (ESRD CIP). The ESRD CIP involves the collection of clinical information on a national random sample of adult ($\geq$ 18 years of age), in-center hemodialysis patients, stratified by ESRD Network area and a national random sample of peritoneal dialysis patients. The clinical information collected included the following: pre- and post-dialysis blood urea nitrogen (to calculate urea reduction ratios (URRs) to assess the adequacy of the dialysis treatment), hematocrit and hemoglobin values, transferrin saturation, ferritin concentration, and use of Epoetin (to assess anemia), serum albumin values and the laboratory method used to assess the values (bromcresol green [BCG] and bromcresol purple [BCP]), and the duration of dialysis sessions. The clinical information was collected for a single point in time (for hemodialysis patients, the last quarter of each year, and for peritoneal dialysis patients, the last two months of the year and the first four months of the following year).

In order to make the results of the 1998 Core Indicators data collection effort available promptly, HCFA distributed the report before the accuracy of the data collected was assessed. The object of this report is to present the results of the concurrence of the core indicators data abstracted by dialysis facility staff and Network staff for the hemodialysis patient sample, the peritoneal dialysis patient sample, and the in-center hemodialysis Health Maintenance Organization (HMO) sample for the 1998 data collection effort.

Method - Hemodialysis Patients

Each Network selected at least 5 facilities in their area and reabstracted data from a sample of approximately 5% of the medical records of hemodialysis patients previously abstracted by ESRD facility staff. The abstraction of the data by dialysis facility staff was conducted during July and August of 1998. The data were reabstracted by the Network staff in the Fall of 1998 and forwarded to HCFA for analysis. Concurrence analysis was conducted by pairing the data from facility staff and Network staff on the patient identification number and the core indicators.

Key Findings - Hemodialysis Patients

A total of 418 records (6% of the original 7092) were reabstracted by the Networks; 396 (95%) of these were matched with data abstracted by the dialysis facilities. Table 1 presents a comparison of clinical characteristics of the two samples. Tables 2A-F present the assessment of the level of concurrence for selected clinical core indicators of data abstracted by dialysis facility staff and data abstracted by ESRD Network staff. The lowest level of agreement, 88% was found for Epoetin dosage data; all other core indicators examined had levels of agreement $\geq$ 95%.

Conclusion - Hemodialysis Patients

Overall, a high degree of concurrence was found between the two datasets. The clinical characteristics of adult, in-center hemodialysis patients in the 1998 ESRD CIP are essentially the same when data are abstracted by dialysis facility staff as when data are abstracted by ESRD Network staff. The data show that important opportunities to improve care for these patients remain.

TABLE 1. Clinical characteristics of adult, in-center hemodialysis patients using data abstracted by dialysis facility staff compared to ESRD Network staff (n=396), 1998 ESRD Core Indicators Project.

Clinical Indicators & Patient Characteristics	Abstracted by Facility staff	Abstracted by Network staff
Adequacy of Dialysis		
Urea Reduction Ratio (URR)	(n= 378)	(n= 375)
URR ≥ 65%	76%	77%
Average URR	69.3% (40.0%-80.0%)	69.6% (40.0%-80.0%)
Average time per dialysis session (min.)	(n= 395) 210 (90-300)	(n= 394) 208 (110-300)
Anemia Management		
	(n= 396)	(n= 395)
Hematocrit <28%	6%	5%
Hemocrit ≥ 33%	53%	53%
Hemocrit 33%-36%	44%	43%
Average Hematocrit (%)	32.9 (15.8-46.4)	32.9 (15.8-46.6)
	(n=385)	(n=385)
Hemoglobin 11-12 gm/dL	40%	40%
Average Hemoglobin (gm/dL)	10.7 (5.5-15.7)	10.7 (5.5-15.7)
	(n=369)	(n=332)
Transferrin saturation ≥ 20%	76%	77%
Average transferrin saturation	30.7 (7.0-114.0)	30.1 (7.0-98.0)
	(n=369)	(n=361)
Ferritin concentration ≥ 100 ng/mL	84%	85%
Average ferritin concentration (ng/mL)	512 (11-3526)	529 (11-3526)
Average Epoetin dose (units per week)	(n= 375) 13,000 (1,000-72,000)	(n= 374) 14,477 (1,167-72,000)
Serum Albumin (gm/dL)	(n= 396)	(n= 395)
Average albumin (BCG)	3.8 (1.5-5.5)	3.8 (1.5-5.5)
Average albumin (BCP) (BCG=bromcresol green; BCP=bromcresol purple)	3.7 (2.0-4.7)	3.6 (2.0-4.5)
Low albumin <3.5 gm/dL(BCG)or <3.2gm/dL(BCP)	16%	17%

TABLES 2A-2F. Level of concurrence (%) between data abstracted by dialysis facility staff and ESRD Network staff for selected core indicators for hemodialysis patients, 1998 ESRD Core Indicators Project.

The method used to obtain the percent agreement is presented in the table below. Cells a and d represent instances when both Network and Facility staff reported the same values for a core indicator. These two cells represent agreement. On the other hand, cells b and c represent cases when there was disagreement between the two sources of data on a value for a particular core indicator.

Network data

Facility data

	+	-	
+	a	b	a+b
-	c	d	c+d
	a+c	b+d	Total

$$\text{Level of concurrence} = \frac{a + d}{\text{Total}} \times 100$$

2A. Adequacy of dialysis (URR):

Network data

Facility data

	<65%	**š65%**	**Total**
<65%	78	11	89
š65%	8	277	285
Total	86	288	374

Level of concurrence = $\frac{78 + 277}{374}$ = 95%

2C. Transferrin Saturation š 20%:

Network data

Facility data

	< 20 %	**š20%**	**Total**
< 20%	70	1	71
š20%	0	246	246
Total	70	247	317

Level of concurrence = $\frac{70 + 246}{317}$ = 99%

2E. Epoetin Dosage (units per week):

Network data

Facility data

	< 14,000	**š 14,000**	**Total**
< 14,000	196	33	229
š14,000	11	129	140
Total	207	162	369

Level of concurrence = $\frac{196 + 129}{369}$ = 88%

2B. Severe anemia (hematocrit < 28%):

Network data

Facility data

	<28%	**š28%**	**Total**
<28%	19	3	22
š28%	1	372	373
Total	20	375	395

Level of concurrence = $\frac{19 + 372}{395}$ = 99%

2D. Ferritin Concentration š 100 ng/mL:

Network data

Facility data

	<100 ng/mL	**š100 ng/mL**	**Total**
<100 ng/mL	53	2	55
š100 ng/mL	0	300	300
Total	53	302	355

Level of concurrence = $\frac{53 + 300}{355}$ = 99%

2F. Low serum albumin values (< 3.5/3.2gm/dL by BCG/BCP methods)

Network data

Facility data

	<3.5/3.2 gm/dL	**š3.5/3.2 gm/dL**	**Total**
<3.5/3.2 gm/dL	56	6	62
š3.5/3.2 gm/dL	12	321	333
Total	68	327	395

Level of concurrence = $\frac{56+321}{395}$ = 95%

Method - Peritoneal Dialysis Patients

Data from November 1997 through April 1998 were abstracted by dialysis facility staff during July and August of 1998. During the Fall of the same year, Network staff reabstracted a total of 75 records, approximately 5% of the 1371 originally abstracted by dialysis facility staff. Seventy-five (100%) of those records were matched with records abstracted from facility staff for the analysis presented in this report. More than 710 peritoneal dialysis facilities submitted data for analysis. The reabstracted data were computerized at each Network and forwarded to HCFA for analysis. Concurrence analysis was conducted by pairing the data abstracted by facility staff and the data abstracted by Network staff using the patient identification number. The percentage of concurrence of data abstracted by the facility staff and reabstracted by the Network staff was calculated for the following indicators: low serum albumin(<3.5 gm/dL or <3.2 gm/dL based on laboratory method used), hematocrit values <28%, hematocrit values >30%, transferrin saturation ≥ 20%, ferritin concentration ≥ 100 ng/mL, diastolic blood pressure >90mmHg, systolic blood pressure >150mmHg, and Epoetin dosage ≥ 10,000 units/week. (Tables 4A-4G).

Key Findings - Peritoneal Dialysis Patients

All core indicators examined had a level of agreement ≥91%.

Conclusion - Peritoneal Dialysis Patients

Overall, a high degree of concurrence was found between the two data sets. The clinical characteristics (core indicators) of adult, peritoneal dialysis patients in the 1998 ESRD-CIP are essentially the same when data are abstracted by ESRD facility staff as when data are abstracted by ESRD Network staff. The data show that important opportunities for improvement remain.

TABLE 3. Clinical characteristics of adult, peritoneal dialysis patients using data abstracted by the dialysis facility staff compared to ESRD Network staff (75), 1998 ESRD Core Indicators Project.

Clinical Indicators & Patient Characteristics	Abstracted by Facility Staff	Abstracted by Network Staff
Anemia Management	(n= 75)	(n= 74)
Hematocrit <28%	13%	12%
Hematocrit ≥ 33%	48%	45%
Hematocrit 33%-36%	40%	35%
Hematocrit >30%	65%	64%
Average hematocrit (%)	32.4 (20.6-43.7)	32.3 (21.1-42.3)
	(n=74)	(n= 75)
Hemogloblin 11-12 gm/dL	36%	36%
Average Hemogloblin (gm/dL)	10.7 (7.0-14.5)	10.6 (7.0-14.1)
	(n=64)	(n=66)
Transferrin saturation ≥ 20%	72%	77%
Average transferrin saturation (%)	27.3 (6.5-95.0)	27.8 (6.5-95.0)
	(n=70)	(n=71)
Ferritin concentration ≥ 100 ng/mL	81%	79%
Average ferritin concentration (ng/mL)	350 (12.5-1909)	396 (12.5-4590)
	(n= 64)	(n= 66)
Average Epoetin dose (units per week)	10,949 (1,000-30,000)	10,970 (1,000-30,000)
Serum Albumin	(n=74)	(n=75)
Low albumin (<3.2 gm/dL BCP/<3.5 gm/dL BCG) (BCG=bromcresol green; BCP=bromcresol purple)	42%	41%
Blood Pressure		
Pre-dialysis systolic blood pressure	(n=72)	(n=71)
>150 mmHg	26%	28%
Average pre-dialysis systolic blood pressure	138 (95-195)	137 (90-180)
Pre-dialysis diastolic blood pressure	(n=73)	(n=72)
>90 mmHg	16%	15%
Average pre-dialysis diastolic blood pressure	80 (39-105)	79 (36-110)

TABLES 4A-4G. Level of concurrence (%) between data abstracted by the dialysis facility staff and ESRD Network staff for selected core indicators for peritoneal dialysis patients, 1998 ESRD Core Indicators Project.

The method used to obtain the percent agreement is presented in the table below. Cells a and d represent instances when both Network and Facilities staff reported the same values for a core indicator. These two cells represent agreement. On the other hand, cells b and c represent cases when there was disagreement between the two sources of data on a value for a particular core indicator.

Network data

Facility data	+	-	
+	a	b	a+b
-	c	d	c+d
	a+c	b+d	Total

Level of concurrence = $\frac{a + d}{\text{Total}}$ x 100

4A. Low serum albumin (<3.2gm/dL BCP or <3.5gm/dL BCG):

Network data

Facility data	**< 3.5/3.2 gm/dL**	**Š3.5/3.2 gm/dL**	**Total**
< 3.5/3.2 gm/dL	28	3	31
Š3.5/3.2 gm/dL	2	41	43
Total	30	44	74

Level of concurrence = $\frac{28+41}{74}$ = 93%

4B.1. Hematocrit level <28%:

Network data

Facility data	**<28%**	**Š28%**	**Total**
<28%	9	1	10
Š28%	0	64	64
Total	9	65	74

Level of concurrence = $\frac{9+64}{74}$ = 99%

4B.2. Hematocrit level >30%:

Network data

Facility data	**˜30%**	**>30%**	**Total**
˜30%	25	1	26
>30%	2	46	48
Total	27	47	74

Level of concurrence = $\frac{25+46}{74}$ = 96%

4C. Epoetin Dosage (units per week):

Network data

Facility data	**<10,000**	**Š10,000**	**Total**
<10,000	24	2	26
Š10,000	1	35	36
Total	25	37	62

Level of concurrence = $\frac{24+35}{62}$ = 95%

4D. Transferrin Saturation Š 20%:

Network data

Facility data	**<20%**	**Š20%**	**Total**
<20%	15	3	18

Level of concurrence = $\frac{15+42}{60}$ = 95%

4E. Ferritin concentration Š 100ng/mL:

Network data

Facility data	**<100 ng/mL**	**Š100 ng/mL**	**Total**
<100 ng/mL	13	0	13
Š100 ng/mL	2	54	56
Total	15	54	69

Level of concurrence = $\frac{13+54}{69}$= 97%

4F. Diastolic blood pressure:

Network data

Facility data	**˜90**	**>90**	**Total**
˜90	57	2	59
>90	3	9	12
Total	60	11	71

Level of concurrence = $\frac{57+9}{71}$= 93%

4G. Systolic blood pressure:

Network data

Facility data	**˜150**	**>150**	**Total**
˜150	48	3	51
>150	3	16	19
Total	51	19	70

Level of concurrence = $\frac{48+16}{70}$ = 91%

Method - HMO Patients

Data from October - December 1997 for a separately drawn national random sample (n = 500) of identified HMO in-center hemodialysis patients were abstracted by facility staff during July and August of 1998. Each Network selected at least one patient from their HMO sample so that approximately 5% of this sample would have data re-abstracted for validation purposes. The data were re-abstracted by Network staff in the Fall of 1998 and forwarded to HCFA for analysis. Concurrence analysis was conducted by pairing the data from facility staff and Network staff on the patient identification number and the core indicators.

Key Findings - HMO Patients

A total of 34 records (7% of the 482 originally abstracted by facility staff) were re-abstracted by Network personnel. Thirty-four (100%) were matched with data abstracted by the dialysis facilities. Table 5 presents a comparison of clinical characteristics of the two samples. Tables 6A-F present the assessment of the level of concurrence for selected clinical core indicators of data abstracted by dialysis facility staff and data abstracted by ESRD Network staff. All core indicators examined had a level of agreement $ 93%.

Conclusion - HMO Patients

Overall, a high degree of concurrence was found between the two datasets. The clinical characteristics of adult-in-center hemodialysis patients enrolled in an HMO in the 1998 ESRD-CIP are essentially the same when data are abstracted by dialysis facility staff as when data are abstracted by ESRD Network staff. The data show that important opportunities to improve care for these patients remain.

TABLE 5. Clinical characteristics of adult, in-center hemodialysis HMO patients using data abstracted by the dialysis facility staff compared to ESRD Network staff (n=34), 1998 ESRD Core Indicators Project.

Clinical Indicators & Patient Characteristics	Abstracted by Facility Staff	Abstracted by Network Staff
Adequacy of Dialysis		
Urea Reduction Ration (URR)	(n=29)	(n=30)
URR ≥ 65%	86%	80%
Average URR	70.3 (50.0-80.0)	69.7 (50.0-80.0)
Average time per dialysis session (min.)	(n=33) 201 (145-300)	(n=34) 203 (145-300)
Anemia Management		
	(n=34)	(n=34)
Hematocrit < 28%	9%	3%
Hematocrit ≥ 33%	56%	59%
Hematocrit 33%-36%	50%	53%
Average Hematocrit (%)	33.0 (26.1-38.4)	33.2 (26.1-38.4)
	(n=34)	(n=34)
Hemogloblin 11-12 gm/dL	47%	50%
Average Hemogloblin (gm/dL)	11.0 (8.6-12.8)	11.0 (8.6-12.8)
Transferrin saturation ≥ 20%	(n=31) 77%	(n=29) 79%
Average transferrin saturation (%)	27.5 (8.0-45.3)	29.1 (8.0-45.3)
Ferritin concentration ≥ 100 ng/mL	(n=28) 93%	(n=27) 93%
Average ferritin concentration (ng/mL)	500 (42-1692)	459 (42-919)
Average Epoetin dose (units per week)	(n=33) 15,417 (1,667-30,000)	(n=33) 15,390 (1,667-31,400)
Serum Albumin (gm/dL)		
Average albumin (BCG)	(n=34) 3.9 (3.3-4.7)	(n=34) 3.9 (3.3-4.7)
Average albumin (BCP) (BCG=bromcresol green; BCP=bromcresol purple)	3.6 (3.3-3.8)	3.6 (3.3-3.8)
Low albumin <3.5 gm/dL(BCG) or <3.2 gm/dL(BCP)	12%	12%

TABLES 6A-6F. Level of concurrence (%) between data abstracted by the dialysis facility staff and ESRD Network staff for selected core indicators for in-center hemodialysis HMO patients, 1998 ESRD Core Indicators Project.

The method used to obtain the percent agreement is presented in the table below. Cells a and d represent instances when both Network and Facilities staff reported the same values for a core indicator. These two cells represent agreement. On the other hand, cells b and c represent cases when there was disagreement between the two sources of data on a value for a particular core indicator.

Network data

Facility data	+	-	
+	a	b	a+b
-	c	d	c+d
	a+c	b+d	Total

Level of concurrence = $\frac{a + d}{\text{Total}}$ x 100

6A. Adequacy of dialysis (URR):

Network data

Facility data	<65%	ˇ65%	Total
<65%	4	0	4
ˇ65%	2	23	25
Total	6	23	29

Level of concurrence = $\frac{4+23}{29}$ = 93%

6B. Severe anemia (hematocrit <28%):

Network data

Facility data	<28%	ˇ28%	Total
<28%	1	2	3
ˇ28%	0	31	31
Total	1	33	34

Level of concurrence = $\frac{1 +31}{34}$ = 94%

6C. Transferrin Saturation ˇ20%:

Network data

Facility data	<20%	ˇ20%	Total
<20%	5	1	6
ˇ20%	1	21	22
Total	6	22	28

Level of concurrence = $\frac{5+21}{28}$ = 93%

6D. Ferritin concentration ˇ100 ng/mL:

Network data

Facility data	<100 ng/mL	ˇ100 ng/mL	Total
<100 ng/mL	2	0	2
ˇ100 ng/mL	0	25	25
Total	2	25	27

Level of concurrence = $\frac{2+25}{27}$ = 100%

6E. Epoetin Dosage (units per week):

Network data

Facility data	<15,000	ˇ15,000	Total
<15,000	12	1	13
ˇ15,000	1	19	20
Total	13	20	33

Level of concurrence = $\frac{12+19}{33}$ = 94%

6F. Low serum albumin values (<3.5/3.2 gm/dL by BCG/BCP methods)

Network data

Facility data	<3.5/3.2 gm/dL	ˇ3.5/3.2 gm/dL	Total
<3.5/3.2 gm/dL	4	0	4
ˇ3.5/3.2 gm/dL	0	30	30
Total	4	30	34

Level of concurrence = $\frac{4+30}{34}$ = 100%

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Health Care Financing Administration
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Baltimore, Maryland 21244

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