

Table 1
Descriptive Statistics for Payment Variables and Patient Characteristics
Medicare Hemodialysis Patient Months Included in Preliminary Case-mix Analyses, 2003
(n=1,943,552)*

Payment Variable or Patient Characteristic	Mean Value or Proportion	SD
Payments for separately billable components of example bundles		
Medicare allowed charges (MAC) per session for EPO and iron	\$ 72.73	\$ 70.42
MAC per session for all separately billable services in example bundle 1A	\$ 93.73	\$ 76.36
MAC per session for all separately billable services in example bundle 1C	\$ 101.36	\$ 81.60
MAC per month for all separately billable services in bundle 1C	\$ 1,178.53	\$ 900.27
Demographics		
Age group		
<18 years	0.001	0.034
18-44	0.116	0.320
45-59	0.227	0.419
60-69	0.238	0.426
70-79	0.275	0.447
80+	0.143	0.350
Female	0.475	0.499
Age 18-44 years and female	0.047	0.211
Race		
White	0.550	0.498
Native American	0.014	0.119
Asian	0.024	0.152
Black	0.370	0.483
Pacific Islander	0.008	0.091
Other	0.033	0.179
Unknown	0.001	0.035
Ethnicity		
Hispanic	0.131	0.338
Hispanic status unknown	0.003	0.059
Duration of renal replacement therapy (RRT), 1st of the month		
Started RRT during month	0.011	0.106
1st month of RRT (started RRT previous month)	0.017	0.128
2nd month of RRT	0.018	0.134
3rd month of RRT	0.022	0.148
4th month of RRT	0.021	0.144
5th month of RRT	0.021	0.144
6th month of RRT	0.020	0.140
7th month of RRT	0.020	0.141
8th month of RRT	0.019	0.137
9th month of RRT	0.019	0.135
10th, 11th or 12th month of RRT	0.055	0.228
2nd year of RRT	0.190	0.392
3rd year of RRT	0.153	0.360
3 years or more of RRT	0.413	0.492

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Payment Variable or Patient Characteristic	Mean Value or Proportion	SD
Body size measures		
Body surface area, m ² (DuBois)	1.844	0.230
BMI < 18.5 kg/m ²	0.044	0.204
Laboratory values		
Hematocrit at start of RRT (ME form)	29.152	5.488
Functional status and health behavior		
Inability to ambulate (ME form)	0.026	0.159
Inability to transfer (ME form)	0.007	0.086
Tobacco use - current smoker (ME form)	0.053	0.224
Alcohol Dependence within 12 months	0.042	0.201
Drug Dependence within 12 months	0.018	0.133
Comorbid Conditions		
Cardiac Arrest within 12 months	0.016	0.125
Congestive Heart Failure within 12 months	0.281	0.450
Cardiac Dysrhythmias within 12 months	0.208	0.406
Ischemic Heart Disease within 12 months	0.257	0.437
Pericarditis within 12 months	0.012	0.110
Cerebrovascular Disease within 12 months	0.190	0.392
Diabetes (Primary or Contributing) within 12 months	0.171	0.377
Peripheral Vascular Disease within 12 months	0.267	0.442
Chronic Obstructive Pulmonary Disease within 12 months	0.179	0.383
AIDS within 12 months	0.012	0.111
HIV Positive Status within 12 months	0.010	0.098
Aspiration and Specified Bacterial Pneumonias within 6 months	0.020	0.140
Hepatitis B within 12 months	0.031	0.173
Other Hepatitis from 1999 to present	0.123	0.328
Opportunistic Infections within 6 months	0.007	0.082
Pneumococcal pneumonia, emphysema, lung abcess within 6 months	0.013	0.112
Septicemia/Shock within 6 months	0.124	0.330
Other infections within 6 months	0.203	0.402
Gastro-Intestinal Tract Bleeding within 6 months	0.020	0.140
GI Ulcer - no hemorrhage within 6 months	0.031	0.174
Esophageal Varices within 6 months	0.002	0.044
Acquired Hemolytic Anemias within 12 months	0.014	0.118
Hereditary Hemolytic Anemias from 1999 to present	0.021	0.144
Sickle-Cell Anemia from 1999 to present	0.004	0.061
Other Anemias within two years	0.000	0.002
Leukemia within 12 months	0.004	0.066
Lung, Upper Digestive Tract, and Other Severe Cancers within 12 months	0.010	0.101
Lymphatic System, Head, and Other Major Cancers within 12 months	0.000	0.020
Lymphoma within two years	0.006	0.075
Metastatic Cancers within 12 months	0.011	0.104
Multiple Myeloma within 12 months	0.005	0.071

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(n=1,943,552)*

Payment Variable or Patient Characteristic	Mean Value or Proportion	SD
Breast, Prostate, Colorectal and Other Cancers within 12 months	0.058	0.234
Hyperparathyroidism within 12 months	0.135	0.342
Monoclonal Gammopathy within 12 months	0.007	0.081
Myelofibrosis within 12 months	0.000	0.018
Myelodysplastic Syndrome from 1999 to present	0.012	0.108
Prior health care utilization		
Hospitalized during the previous month	0.173	0.378
Type of patient month		
Full month HD, no events	0.721	0.448
Full month PD, no events	0.000	0.000
Transplant during month	0.002	0.046
Death or withdrawal from dialysis during month	0.014	0.117
Hospitalization only during month	0.150	0.357
Modality switch during month	0.000	0.016
Transfer between facilities during month	0.032	0.175
Training during month	0.000	0.012
Multiple events during month	0.009	0.096
Unexplained low number of sessions during month	0.061	0.238
Prior EPO dose response		
Ratio of average EPO dose to average hematocrit during April-June 2002	1.348	0.811

*Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

Table 2
Descriptive Statistics for Payment Variables and Patient Characteristics
Medicare Peritoneal Dialysis Patient Months Included in Preliminary Case-mix Analyses, 2003
(n=121,573)*

Payment Variable or Patient Characteristic	Mean Value or Proportion	SD
Payments for separately billable components of example bundles		
Medicare allowed charges (MAC) per session for EPO and iron	\$32.16	\$84.02
MAC per session for all separately billable services in example bundle 1A	\$36.61	\$86.56
MAC per session for all separately billable services in example bundle 1C	\$42.20	\$92.47
MAC per month for all separately billable services in bundle 1C	\$485.24	\$594.97
Demographics		
Age group		
<18 years	0.010	0.097
18-44	0.225	0.418
45-59	0.280	0.449
60-69	0.225	0.417
70-79	0.202	0.401
80+	0.059	0.237
Female	0.495	0.500
Age 18-44 years and female	0.123	0.329
Race		
White	0.663	0.473
Native American	0.013	0.111
Asian	0.022	0.147
Black	0.253	0.435
Pacific Islander	0.006	0.077
Other	0.042	0.201
Unknown	0.000	0.021
Ethnicity		
Hispanic	0.132	0.338
Hispanic status unknown	0.004	0.064
Duration of renal replacement therapy (RRT), 1st of the month		
Started RRT during month	0.008	0.090
1st month of RRT (started RRT previous month)	0.014	0.117
2nd month of RRT	0.017	0.130
3rd month of RRT	0.022	0.146
4th month of RRT	0.022	0.148
5th month of RRT	0.024	0.152
6th month of RRT	0.023	0.150
7th month of RRT	0.023	0.151
8th month of RRT	0.022	0.147
9th month of RRT	0.022	0.145
10th, 11th or 12th month of RRT	0.064	0.245
2nd year of RRT	0.214	0.410
3rd year of RRT	0.169	0.375
3 years or more of RRT	0.357	0.479

Table 2
Descriptive Statistics for Payment Variables and Patient Characteristics
Medicare Peritoneal Dialysis Patient Months Included in Preliminary Case-mix Analyses, 2003
(n=121,573)*

Payment Variable or Patient Characteristic	Mean Value or Proportion	SD
Body size measures		
Body surface area, m ² (DuBois)	1.838	0.242
BMI < 18.5 kg/m ²	0.042	0.200
Laboratory values		
Hematocrit at start of RRT (ME form)	30.073	5.794
Functional status and health behavior		
Inability to ambulate (ME form)	0.009	0.094
Inability to transfer (ME form)	0.003	0.054
Tobacco use - current smoker (ME form)	0.061	0.239
Alcohol Dependence within 12 months	0.032	0.176
Drug Dependence within 12 months	0.012	0.108
Comorbid Conditions		
Cardiac Arrest within 12 months	0.009	0.095
Congestive Heart Failure within 12 months	0.207	0.405
Cardiac Dysrhythmias within 12 months	0.150	0.357
Ischemic Heart Disease within 12 months	0.202	0.402
Pericarditis within 12 months	0.011	0.103
Cerebrovascular Disease within 12 months	0.133	0.340
Diabetes (Primary or Contributing) within 12 months	0.149	0.356
Peripheral Vascular Disease within 12 months	0.178	0.382
Chronic Obstructive Pulmonary Disease within 12 months	0.147	0.354
AIDS within 12 months	0.008	0.087
HIV Positive Status within 12 months	0.008	0.091
Aspiration and Specified Bacterial Pneumonias within 6 months	0.010	0.100
Hepatitis B within 12 months	0.026	0.159
Other Hepatitis from 1999 to present	0.100	0.301
Opportunistic Infections within 6 months	0.006	0.078
Pneumococcal pneumonia, emphysema, lung abcess within 6 months	0.007	0.080
Septicemia/Shock within 6 months	0.065	0.247
Other infections within 6 months	0.183	0.387
Gastro-Intestinal Tract Bleeding within 6 months	0.011	0.105
GI Ulcer - no hemorrhage within 6 months	0.023	0.150
Esophageal Varices within 6 months	0.001	0.029
Acquired Hemolytic Anemias within 12 months	0.010	0.098
Hereditary Hemolytic Anemias from 1999 to present	0.018	0.133
Sickle-Cell Anemia from 1999 to present	0.003	0.052
Other Anemias within two years	0.000	0.000
Leukemia within 12 months	0.003	0.059
Lung, Upper Digestive Tract, and Other Severe Cancers within 12 months	0.006	0.077
Lymphatic System, Head, and Other Major Cancers within 12 months	0.000	0.011
Lymphoma within two years	0.005	0.070
Metastatic Cancers within 12 months	0.007	0.083
Multiple Myeloma within 12 months	0.004	0.066

Table 2
Descriptive Statistics for Payment Variables and Patient Characteristics
Medicare Peritoneal Dialysis Patient Months Included in Preliminary Case-mix Analyses, 2003
(n=121,573)*

Payment Variable or Patient Characteristic	Mean Value or Proportion	SD
Breast, Prostate, Colorectal and Other Cancers within 12 months	0.047	0.211
Hyperparathyroidism within 12 months	0.140	0.347
Monoclonal Gammopathy within 12 months	0.005	0.069
Myelofibrosis within 12 months	0.000	0.009
Myelodysplastic Syndrome from 1999 to present	0.010	0.101
Prior health care utilization		
Hospitalized during the previous month	0.121	0.327
Type of patient month		
Full month HD, no events	0.000	0.000
Full month PD, no events	0.799	0.401
Transplant during month	0.004	0.064
Death or withdrawal from dialysis during month	0.010	0.101
Hospitalization only during month	0.113	0.316
Modality switch during month	0.005	0.074
Transfer between facilities during month	0.005	0.069
Training during month	0.025	0.155
Multiple events during month	0.024	0.153
Unexplained low number of sessions during month	0.013	0.113
Prior EPO dose response		
Ratio of average EPO dose to average hematocrit during April-June 2002	1.443	0.298

*Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

Table 3

Preliminary Case-mix Analyses

Comparison of Models 1 and 1T for EPO and Iron Injectables: Impact of Possible Payment Outliers

Medicare Hemodialysis Patient Months, 2003*

Patient Characteristic	Model 1: log(MAC/session), does not exclude possible payment outliers (n=1,943,552)			Model 1T: log(MAC/session), excludes possible payment outliers** (n=1,924,131)		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Demographics						
Age group						
<18 years	0.841	-7.08	<.0001	0.826	-7.88	<.0001
18-44	1.014	3.70	0.0002	0.999	-0.22	0.8248
45-59	1.020	8.14	<.0001	1.011	4.57	<.0001
60-69	1.035	14.90	<.0001	1.034	14.24	<.0001
70-79	1.000	reference		1.000	reference	
80+	0.955	-16.89	<.0001	0.958	-15.84	<.0001
Female	1.178	85.08	<.0001	1.177	85.23	<.0001
Age 18-44 years and female	1.149	26.59	<.0001	1.143	25.73	<.0001
Race						
White	1.000	reference		1.000	reference	
Native American	0.975	-3.60	0.0003	0.975	-3.66	0.0003
Asian	1.005	0.93	0.3534	1.010	1.85	0.0636
Black	1.055	27.89	<.0001	1.051	26.48	<.0001
Pacific Islander	0.880	-14.06	<.0001	0.887	-13.33	<.0001
Other	1.004	0.83	0.4040	1.007	1.41	0.1572
Unknown	1.022	0.96	0.3394	1.013	0.57	0.5658
Hispanic						
No	1.000	reference		1.000	reference	
Yes	0.908	-35.05	<.0001	0.916	-31.88	<.0001
Unknown	1.069	4.73	<.0001	1.070	4.87	<.0001
Duration of RRT, 1st of the month						
Started RRT during month	1.138	16.40	<.0001	1.098	11.87	<.0001
1st month of RRT (started RRT previous month)	1.456	55.90	<.0001	1.483	59.14	<.0001
2nd month of RRT	1.656	80.58	<.0001	1.679	83.41	<.0001
3rd month of RRT	1.472	68.20	<.0001	1.487	70.54	<.0001
4th month of RRT	1.294	44.24	<.0001	1.304	45.82	<.0001
5th month of RRT	1.231	35.86	<.0001	1.240	37.33	<.0001
6th month of RRT	1.203	30.95	<.0001	1.210	32.18	<.0001
7th month of RRT	1.163	25.42	<.0001	1.170	26.57	<.0001
8th month of RRT	1.102	15.98	<.0001	1.107	16.78	<.0001
9th month of RRT	1.071	11.05	<.0001	1.077	12.08	<.0001
10th, 11th or 12th month of RRT	1.045	11.74	<.0001	1.051	13.26	<.0001
2nd year of RRT	1.006	2.66	0.0079	1.009	4.04	<.0001
3rd year of RRT	0.996	-1.73	0.0843	0.997	-1.06	0.2911
3 years or more of RRT	1.000	reference		1.000	reference	
Body size measures						
Body surface area (DuBois): per 0.1 m ²	1.033	75.20	<.0001	1.031	71.71	<.0001
Body mass index (kg/m ²)						
<18.5	0.983	-4.04	<.0001	0.981	-4.54	<.0001
≥18.5	1.000	reference		1.000	reference	
Laboratory values						
Hematocrit at start of RRT (ME form): per 1.0 ΔHCT	0.979	-140.94	<.0001	0.979	-136.34	<.0001
Functional status and health behavior						
Inability to ambulate (ME form)	1.051	8.41	<.0001	1.050	8.40	<.0001
Inability to transfer (ME form)	0.955	-4.25	<.0001	0.952	-4.55	<.0001
Tobacco use - current smoker (ME form)	0.933	-18.77	<.0001	0.934	-18.59	<.0001
Alcohol Dependence within 12 months	1.050	11.34	<.0001	1.046	10.46	<.0001
Drug Dependence within 12 months	1.116	17.56	<.0001	1.109	16.60	<.0001
Comorbid Conditions						
Cardiac Arrest within 12 months	1.107	15.18	<.0001	1.098	14.04	<.0001
Congestive Heart Failure within 12 months	1.039	19.40	<.0001	1.039	19.40	<.0001
Cardiac Dysrhythmias within 12 months	1.044	20.07	<.0001	1.042	19.12	<.0001

Table 3

Preliminary Case-mix Analyses

Comparison of Models 1 and 1T for EPO and Iron Injectables: Impact of Possible Payment Outliers

Medicare Hemodialysis Patient Months, 2003*

Patient Characteristic	Model 1: log(MAC/session), does not exclude possible payment outliers (n=1,943,552)			Model 1T: log(MAC/session), excludes possible payment outliers** (n=1,924,131)		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Ischemic Heart Disease within 12 months	0.994	-2.81	0.0050	0.995	-2.46	0.0140
Pericarditis within 12 months	1.198	24.24	<.0001	1.178	21.95	<.0001
Cerebrovascular Disease within 12 months	1.055	24.53	<.0001	1.054	24.21	<.0001
Diabetes (Primary or Contributing) within 12 months	0.989	-4.94	<.0001	0.987	-5.56	<.0001
Peripheral Vascular Disease within 12 months	1.030	15.20	<.0001	1.028	14.19	<.0001
Chronic Obstructive Pulmonary Disease within 12 months	1.050	21.79	<.0001	1.047	20.75	<.0001
AIDS within 12 months	0.995	-0.71	0.4795	0.995	-0.70	0.4836
HIV Positive Status within 12 months	1.153	16.60	<.0001	1.129	14.16	<.0001
Aspiration and Specified Bacterial Pneumonias within 6 months	1.128	20.03	<.0001	1.121	19.00	<.0001
Hepatitis B within 12 months	1.027	5.57	<.0001	1.024	4.89	<.0001
Other Hepatitis from 1999 to present	0.951	-18.53	<.0001	0.953	-18.16	<.0001
Opportunistic Infections within 6 months	1.206	18.53	<.0001	1.183	16.56	<.0001
Pneumococcal pneumonia, emphysema, lung abscess within 6 months	1.161	20.25	<.0001	1.149	18.88	<.0001
Septicemia/Shock within 6 months	1.164	58.45	<.0001	1.155	55.44	<.0001
Other infections within 6 months	1.057	26.24	<.0001	1.054	25.00	<.0001
Gastro-Intestinal Tract Bleeding within 6 months	1.265	38.48	<.0001	1.250	36.58	<.0001
GI Ulcer - no hemorrhage within 6 months	1.132	25.24	<.0001	1.121	23.37	<.0001
Esophageal Varices within 6 months	1.367	16.71	<.0001	1.310	14.28	<.0001
Acquired Hemolytic Anemias within 12 months	1.087	11.97	<.0001	1.071	9.89	<.0001
Hereditary Hemolytic Anemias from 1999 to present	1.107	17.74	<.0001	1.095	15.78	<.0001
Sickle-Cell Anemia from 1999 to present	1.226	15.06	<.0001	1.186	12.50	<.0001
Other Anemias within two years	2.703	3.01	0.0026	2.777	3.13	0.0018
Leukemia within 12 months	1.176	12.89	<.0001	1.144	10.70	<.0001
Lung, Upper Digestive Tract, and Other Severe Cancers within 12 months	1.122	14.00	<.0001	1.102	11.85	<.0001
Lymphatic System, Head, and Other Major Cancers within 12 months	1.095	2.21	0.0268	1.103	2.40	0.0166
Lymphoma within two years	1.172	14.30	<.0001	1.147	12.37	<.0001
Metastatic Cancers within 12 months	1.142	16.52	<.0001	1.129	15.06	<.0001
Multiple Myeloma within 12 months	1.188	14.56	<.0001	1.159	12.43	<.0001
Breast, Prostate, Colorectal and Other Cancers within 12 months	1.099	26.44	<.0001	1.092	24.83	<.0001
Hyperparathyroidism within 12 months	1.008	3.14	0.0017	1.007	2.75	0.0060
Monoclonal Gammopathy within 12 months	1.090	8.26	<.0001	1.080	7.45	<.0001
Myelofibrosis within 12 months	1.215	4.29	<.0001	1.182	3.65	0.0003
Myelodysplastic Syndrome from 1999 to present	1.377	41.59	<.0001	1.317	35.51	<.0001
Prior health care utilization						
Hospitalized during the previous month	1.560	192.07	<.0001	1.538	186.29	<.0001

*Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

**Excluded months in which payments exceeded the 99th percentile.

Table 4

Preliminary Case-mix Analyses
Comparison of Models 2 and 3: Impact of Expanding the Bundle

Medicare Hemodialysis Patient Months, 2003 (n=1,943,552)*

Patient Characteristic	Model 2:			Model 3:		
	log(MAC/session) for all SB services in bundle 1A			log(MAC/session) for all SB services in bundle 1C		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Demographics						
Age group						
<18 years	0.923	-4.59	<.0001	1.008	0.50	0.6165
18-44	1.078	28.50	<.0001	1.080	31.91	<.0001
45-59	1.056	31.43	<.0001	1.057	34.94	<.0001
60-69	1.041	24.29	<.0001	1.041	26.39	<.0001
70-79	1.000	reference		1.000	reference	
80+	0.952	-25.40	<.0001	0.955	-26.20	<.0001
Female	1.111	76.94	<.0001	1.107	80.72	<.0001
Age 18-44 years and female	1.077	19.91	<.0001	1.078	21.98	<.0001
Race						
White	1.000	reference		1.000	reference	
Native American	0.961	-8.07	<.0001	0.945	-12.38	<.0001
Asian	0.997	-0.76	0.4501	0.979	-5.76	<.0001
Black	1.192	129.55	<.0001	1.151	113.19	<.0001
Pacific Islander	0.911	-14.41	<.0001	0.896	-18.53	<.0001
Other	1.012	3.33	0.0009	1.005	1.48	0.1397
Unknown	1.083	4.84	<.0001	1.073	4.64	<.0001
Hispanic						
No	1.000	reference		1.000	reference	
Yes	0.954	-23.88	<.0001	0.953	-26.69	<.0001
Unknown	1.072	6.97	<.0001	1.063	6.71	<.0001
Duration of RRT, 1st of the month						
Started RRT during month	1.216	34.96	<.0001	1.599	91.54	<.0001
1st month of RRT (started RRT previous month)	1.231	43.48	<.0001	1.280	56.31	<.0001
2nd month of RRT	1.346	66.72	<.0001	1.370	77.07	<.0001
3rd month of RRT	1.226	50.55	<.0001	1.254	61.19	<.0001
4th month of RRT	1.111	25.46	<.0001	1.136	33.60	<.0001
5th month of RRT	1.060	14.12	<.0001	1.077	19.75	<.0001
6th month of RRT	1.034	7.97	<.0001	1.057	14.28	<.0001
7th month of RRT	1.009	2.12	0.0343	1.037	9.43	<.0001
8th month of RRT	0.973	-6.24	<.0001	0.999	-0.30	0.7614
9th month of RRT	0.955	-10.53	<.0001	0.975	-6.22	<.0001
10th, 11th or 12th month of RRT	0.943	-22.11	<.0001	0.960	-16.89	<.0001
2nd year of RRT	0.937	-39.78	<.0001	0.948	-35.83	<.0001
3rd year of RRT	0.958	-24.16	<.0001	0.961	-24.35	<.0001
3 years or more of RRT	1.000	reference		1.000	reference	
Body size measures						
Body surface area (DuBois): per 0.1 m ²	1.031	99.16	<.0001	1.030	103.69	<.0001
Body mass index (kg/m ²)						
<18.5	0.991	-3.06	0.0022	0.993	-2.59	0.0096
≥18.5	1.000	reference		1.000	reference	
Laboratory values						
Hematocrit at start of RRT (ME form): per 1.0 ΔHCT	0.986	-132.07	<.0001	0.987	-126.89	<.0001
Functional status and health behavior						
Inability to ambulate (ME form)	1.015	3.50	0.0005	1.031	8.07	<.0001
Inability to transfer (ME form)	0.936	-8.47	<.0001	0.948	-7.55	<.0001
Tobacco use - current smoker (ME form)	0.954	-17.80	<.0001	0.957	-18.34	<.0001
Alcohol Dependence within 12 months	1.038	12.05	<.0001	1.039	13.47	<.0001
Drug Dependence within 12 months	1.086	18.61	<.0001	1.099	23.09	<.0001
Comorbid Conditions						
Cardiac Arrest within 12 months	1.073	14.90	<.0001	1.099	21.75	<.0001
Congestive Heart Failure within 12 months	1.021	14.57	<.0001	1.018	13.48	<.0001
Cardiac Dysrhythmias within 12 months	1.028	18.11	<.0001	1.032	22.45	<.0001

Table 4

Preliminary Case-mix Analyses
Comparison of Models 2 and 3: Impact of Expanding the Bundle

Medicare Hemodialysis Patient Months, 2003 (n=1,943,552)*

Patient Characteristic	Model 2:			Model 3:		
	log(MAC/session) for all SB services in bundle 1A			log(MAC/session) for all SB services in bundle 1C		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Ischemic Heart Disease within 12 months	0.996	-3.02	0.0025	0.996	-3.22	0.0013
Pericarditis within 12 months	1.147	25.80	<.0001	1.149	28.59	<.0001
Cerebrovascular Disease within 12 months	1.030	19.08	<.0001	1.034	23.27	<.0001
Diabetes (Primary or Contributing) within 12 months	1.001	0.56	0.5772	1.000	-0.31	0.7554
Peripheral Vascular Disease within 12 months	1.019	13.63	<.0001	1.022	16.81	<.0001
Chronic Obstructive Pulmonary Disease within 12 months	1.038	23.21	<.0001	1.041	27.57	<.0001
AIDS within 12 months	0.995	-0.92	0.3567	1.017	3.34	0.0008
HIV Positive Status within 12 months	1.105	16.42	<.0001	1.113	19.13	<.0001
Aspiration and Specified Bacterial Pneumonias within 6 months	1.078	17.61	<.0001	1.092	22.61	<.0001
Hepatitis B within 12 months	1.024	7.03	<.0001	1.028	8.84	<.0001
Other Hepatitis from 1999 to present	0.972	-14.81	<.0001	0.981	-10.70	<.0001
Opportunistic Infections within 6 months	1.126	16.47	<.0001	1.159	22.41	<.0001
Pneumococcal pneumonia, emphysema, lung abscess within 6 months	1.111	20.06	<.0001	1.122	23.87	<.0001
Septicemia/Shock within 6 months	1.103	52.80	<.0001	1.118	65.95	<.0001
Other infections within 6 months	1.038	24.37	<.0001	1.044	30.71	<.0001
Gastro-Intestinal Tract Bleeding within 6 months	1.190	40.12	<.0001	1.190	43.60	<.0001
GI Ulcer - no hemorrhage within 6 months	1.092	25.27	<.0001	1.101	30.16	<.0001
Esophageal Varices within 6 months	1.278	18.43	<.0001	1.271	19.65	<.0001
Acquired Hemolytic Anemias within 12 months	1.060	11.76	<.0001	1.071	15.19	<.0001
Hereditary Hemolytic Anemias from 1999 to present	1.091	21.22	<.0001	1.096	24.41	<.0001
Sickle-Cell Anemia from 1999 to present	1.180	17.18	<.0001	1.171	17.92	<.0001
Other Anemias within two years	2.368	3.67	0.0002	2.226	3.71	0.0002
Leukemia within 12 months	1.136	14.33	<.0001	1.150	17.06	<.0001
Lung, Upper Digestive Tract, and Other Severe Cancers within 12 months	1.090	14.71	<.0001	1.100	17.89	<.0001
Lymphatic System, Head, and Other Major Cancers within 12 months	1.032	1.07	0.2860	1.027	1.01	0.3127
Lymphoma within two years	1.128	15.29	<.0001	1.142	18.43	<.0001
Metastatic Cancers within 12 months	1.106	17.52	<.0001	1.117	21.05	<.0001
Multiple Myeloma within 12 months	1.141	15.64	<.0001	1.149	18.01	<.0001
Breast, Prostate, Colorectal and Other Cancers within 12 months	1.076	28.99	<.0001	1.080	32.94	<.0001
Hyperparathyroidism within 12 months	1.015	8.38	<.0001	1.019	11.67	<.0001
Monoclonal Gammopathy within 12 months	1.061	8.01	<.0001	1.072	10.24	<.0001
Myelofibrosis within 12 months	1.175	4.99	<.0001	1.201	6.21	<.0001
Myelodysplastic Syndrome from 1999 to present	1.294	47.11	<.0001	1.291	51.03	<.0001
Prior health care utilization						
Hospitalized during the previous month	1.368	190.39	<.0001	1.364	205.50	<.0001

*Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

Table 5

Preliminary Case-mix Analyses

Comparison of Models 3, 4, 5 and 6 for all Separately Billable Services in Bundle 1C

Impact of Unit of Payment (per session vs. per month) and Adjusting for Type of Month

Medicare Hemodialysis Patient Months, 2003 (n=1,943,552)*

Patient Characteristic	Model 3:			Model 4:			Model 5:			Model 6:		
	log(MAC per session)			log(MAC per session), include "type of month"			log(MAC per month)			log(MAC per month), include "type of month"		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Demographics												
Age group												
<18 years	1.008	0.50	0.6165	0.990	-0.64	0.5246	0.955	-2.68	0.0073	0.971	-1.73	0.0836
18-44	1.080	31.91	<.0001	1.065	26.31	<.0001	1.045	17.04	<.0001	1.060	22.73	<.0001
45-59	1.057	34.94	<.0001	1.051	31.12	<.0001	1.045	25.38	<.0001	1.049	28.35	<.0001
60-69	1.041	26.39	<.0001	1.039	25.12	<.0001	1.038	22.63	<.0001	1.038	22.89	<.0001
70-79	1.000	reference		1.000	reference		1.000	reference		1.000	reference	
80+	0.955	-26.20	<.0001	0.955	-26.44	<.0001	0.950	-27.23	<.0001	0.956	-23.87	<.0001
Female	1.107	80.72	<.0001	1.104	79.46	<.0001	1.106	74.76	<.0001	1.106	75.29	<.0001
Age 18-44 years and female	1.078	21.98	<.0001	1.077	21.92	<.0001	1.077	20.24	<.0001	1.075	20.11	<.0001
Race												
White	1.000	reference		1.000	reference		1.000	reference		1.000	reference	
Native American	0.945	-12.38	<.0001	0.943	-12.87	<.0001	0.944	-11.71	<.0001	0.946	-11.54	<.0001
Asian	0.979	-5.76	<.0001	0.987	-3.74	0.0002	0.993	-1.81	0.0699	0.984	-4.24	<.0001
Black	1.151	113.19	<.0001	1.149	112.31	<.0001	1.144	100.88	<.0001	1.144	101.74	<.0001
Pacific Islander	0.896	-18.53	<.0001	0.905	-16.92	<.0001	0.918	-13.54	<.0001	0.907	-15.58	<.0001
Other	1.005	1.48	0.1397	1.005	1.42	0.1551	0.999	-0.33	0.7409	0.998	-0.52	0.6004
Unknown	1.073	4.64	<.0001	1.076	4.89	<.0001	1.077	4.53	<.0001	1.074	4.44	<.0001
Hispanic												
No	1.000	reference		1.000	reference		1.000	reference		1.000	reference	
Yes	0.953	-26.69	<.0001	0.955	-26.04	<.0001	0.959	-21.67	<.0001	0.954	-24.37	<.0001
Unknown	1.063	6.71	<.0001	1.063	6.69	<.0001	1.061	6.05	<.0001	1.058	5.80	<.0001
Duration of RRT, 1st of the month												
Started RRT during month	1.599	91.54	<.0001	1.668	100.15	<.0001	0.605	-90.87	<.0001	0.583	-98.69	<.0001
1st month of RRT (started RRT previous month)	1.280	56.31	<.0001	1.263	53.61	<.0001	1.222	42.58	<.0001	1.216	42.03	<.0001
2nd month of RRT	1.370	77.07	<.0001	1.360	75.74	<.0001	1.335	65.79	<.0001	1.341	67.52	<.0001
3rd month of RRT	1.254	61.19	<.0001	1.238	58.04	<.0001	1.193	44.34	<.0001	1.213	49.11	<.0001
4th month of RRT	1.136	33.60	<.0001	1.125	31.18	<.0001	1.097	22.55	<.0001	1.108	25.41	<.0001
5th month of RRT	1.077	19.75	<.0001	1.069	17.85	<.0001	1.048	11.64	<.0001	1.054	13.05	<.0001
6th month of RRT	1.057	14.28	<.0001	1.049	12.48	<.0001	1.036	8.52	<.0001	1.040	9.49	<.0001
7th month of RRT	1.037	9.43	<.0001	1.030	7.56	<.0001	1.014	3.24	0.0012	1.017	4.06	<.0001
8th month of RRT	0.999	-0.30	0.7614	0.992	-2.02	0.0432	0.979	-4.99	<.0001	0.980	-4.73	<.0001
9th month of RRT	0.975	-6.22	<.0001	0.970	-7.60	<.0001	0.965	-8.31	<.0001	0.964	-8.48	<.0001
10th, 11th or 12th month of RRT	0.960	-16.89	<.0001	0.954	-19.25	<.0001	0.947	-20.76	<.0001	0.947	-21.01	<.0001
2nd year of RRT	0.948	-35.83	<.0001	0.943	-39.23	<.0001	0.935	-41.45	<.0001	0.938	-39.90	<.0001
3rd year of RRT	0.961	-24.35	<.0001	0.959	-26.38	<.0001	0.952	-28.13	<.0001	0.955	-26.54	<.0001
3 years or more of RRT	1.000	reference		1.000	reference		1.000	reference		1.000	reference	

Table 5

Preliminary Case-mix Analyses

Comparison of Models 3, 4, 5 and 6 for all Separately Billable Services in Bundle 1C

Impact of Unit of Payment (per session vs. per month) and Adjusting for Type of Month

Medicare Hemodialysis Patient Months, 2003 (n=1,943,552)*

Patient Characteristic	Model 3: log(MAC per session)			Model 4: log(MAC per session), include "type of month"			Model 5: log(MAC per month)			Model 6: log(MAC per month), include "type of month"		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Body size measures												
Body surface area (DuBois): per 0.1 m ²	1.030	103.69	<.0001	1.030	106.73	<.0001	1.032	102.98	<.0001	1.031	100.79	<.0001
Body mass index (kg/m ²)												
<18.5	0.993	-2.59	0.0096	0.990	-3.49	0.0005	0.981	-6.45	<.0001	0.987	-4.57	<.0001
≥18.5	1.000	reference		1.000	reference		1.000	reference		1.000	reference	
Laboratory values												
Hematocrit at start of RRT (ME form): per 1.0 ΔHCT	0.987	-126.89	<.0001	0.987	-128.83	<.0001	0.987	-120.24	<.0001	0.987	-120.99	<.0001
Functional status and health behavior												
Inability to ambulate (ME form)	1.031	8.07	<.0001	1.027	7.07	<.0001	1.012	2.83	0.0046	1.018	4.28	<.0001
Inability to transfer (ME form)	0.948	-7.55	<.0001	0.946	-7.85	<.0001	0.935	-8.70	<.0001	0.940	-8.18	<.0001
Tobacco use - current smoker (ME form)	0.957	-18.34	<.0001	0.952	-20.59	<.0001	0.947	-21.02	<.0001	0.953	-18.77	<.0001
Alcohol Dependence within 12 months	1.039	13.47	<.0001	1.030	10.58	<.0001	1.019	6.16	<.0001	1.024	7.75	<.0001
Drug Dependence within 12 months	1.099	23.09	<.0001	1.075	17.92	<.0001	1.036	8.04	<.0001	1.048	10.72	<.0001
Comorbid Conditions												
Cardiac Arrest within 12 months	1.099	21.75	<.0001	1.074	15.94	<.0001	0.839	-37.44	<.0001	1.055	11.19	<.0001
Congestive Heart Failure within 12 months	1.018	13.48	<.0001	1.020	15.46	<.0001	1.019	13.34	<.0001	1.030	21.08	<.0001
Cardiac Dysrhythmias within 12 months	1.032	22.45	<.0001	1.026	18.65	<.0001	1.010	6.75	<.0001	1.026	17.22	<.0001
Ischemic Heart Disease within 12 months	0.996	-3.22	0.0013	0.996	-2.92	0.0034	0.989	-7.39	<.0001	1.000	0.17	0.8678
Pericarditis within 12 months	1.149	28.59	<.0001	1.137	26.62	<.0001	1.118	21.26	<.0001	1.116	21.22	<.0001
Cerebrovascular Disease within 12 months	1.034	23.27	<.0001	1.027	18.89	<.0001	1.012	7.80	<.0001	1.024	15.39	<.0001
Diabetes (Primary or Contributing) within 12 months	1.000	-0.31	0.7554	1.001	0.63	0.5273	0.973	-16.72	<.0001	1.005	3.34	0.0008
Peripheral Vascular Disease within 12 months	1.022	16.81	<.0001	1.021	16.13	<.0001	1.017	12.24	<.0001	1.025	18.30	<.0001
Chronic Obstructive Pulmonary Disease within 12 months	1.041	27.57	<.0001	1.035	23.68	<.0001	1.026	16.20	<.0001	1.036	22.58	<.0001
AIDS within 12 months	1.017	3.34	0.0008	1.016	3.19	0.0014	1.010	1.89	0.0592	1.014	2.70	0.0069
HIV Positive Status within 12 months	1.113	19.13	<.0001	1.112	19.13	<.0001	1.110	17.36	<.0001	1.108	17.26	<.0001
Aspiration and Specified Bacterial Pneumonias within 6 months	1.092	22.61	<.0001	1.067	16.56	<.0001	0.964	-8.72	<.0001	1.005	1.17	0.2407
Hepatitis B within 12 months	1.028	8.84	<.0001	1.025	7.76	<.0001	1.014	3.95	<.0001	1.021	6.19	<.0001
Other Hepatitis from 1999 to present	0.981	-10.70	<.0001	0.982	-10.56	<.0001	0.982	-9.71	<.0001	0.982	-9.81	<.0001
Opportunistic Infections within 6 months	1.159	22.41	<.0001	1.132	18.90	<.0001	1.045	6.23	<.0001	1.064	8.86	<.0001
Pneumococcal pneumonia, emphysema, lung abscess within 6 months	1.122	23.87	<.0001	1.100	19.89	<.0001	1.052	9.72	<.0001	1.070	13.19	<.0001
Septicemia/Shock within 6 months	1.118	65.95	<.0001	1.103	57.91	<.0001	1.056	29.91	<.0001	1.089	47.05	<.0001
Other infections within 6 months	1.044	30.71	<.0001	1.038	26.74	<.0001	1.022	14.63	<.0001	1.036	23.89	<.0001
Gastro-Intestinal Tract Bleeding within 6 months	1.190	43.60	<.0001	1.168	39.19	<.0001	1.128	28.04	<.0001	1.144	31.79	<.0001
GI Ulcer - no hemorrhage within 6 months	1.101	30.16	<.0001	1.087	26.31	<.0001	1.065	18.30	<.0001	1.073	20.80	<.0001
Esophageal Varices within 6 months	1.271	19.65	<.0001	1.250	18.40	<.0001	1.198	13.75	<.0001	1.226	15.71	<.0001

Table 5

Preliminary Case-mix Analyses

Comparison of Models 3, 4, 5 and 6 for all Separately Billable Services in Bundle 1C

Impact of Unit of Payment (per session vs. per month) and Adjusting for Type of Month

Medicare Hemodialysis Patient Months, 2003 (n=1,943,552)*

Patient Characteristic	Model 3: log(MAC per session)			Model 4: log(MAC per session), include "type of month"			Model 5: log(MAC per month)			Model 6: log(MAC per month), include "type of month"		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Acquired Hemolytic Anemias within 12 months	1.071	15.19	<.0001	1.067	14.32	<.0001	1.062	12.43	<.0001	1.065	13.16	<.0001
Hereditary Hemolytic Anemias from 1999 to present	1.096	24.41	<.0001	1.093	24.00	<.0001	1.093	22.01	<.0001	1.092	22.19	<.0001
Sickle-Cell Anemia from 1999 to present	1.171	17.92	<.0001	1.168	17.72	<.0001	1.170	16.59	<.0001	1.172	16.93	<.0001
Other Anemias within two years	2.226	3.71	0.0002	2.137	3.55	0.0004	2.090	3.18	0.0015	2.282	3.60	0.0003
Leukemia within 12 months	1.150	17.06	<.0001	1.142	16.30	<.0001	1.112	12.11	<.0001	1.129	13.98	<.0001
Lung, Upper Digestive Tract, and Other Severe Cancers within 12 months	1.100	17.89	<.0001	1.090	16.18	<.0001	1.038	6.46	<.0001	1.079	13.30	<.0001
Lymphatic System, Head, and Other Major Cancers within 12 months	1.027	1.01	0.3127	1.028	1.03	0.3052	1.016	0.55	0.5832	1.027	0.92	0.3578
Lymphoma within two years	1.142	18.43	<.0001	1.139	18.20	<.0001	1.122	14.82	<.0001	1.130	15.90	<.0001
Metastatic Cancers within 12 months	1.117	21.05	<.0001	1.109	19.76	<.0001	1.084	14.32	<.0001	1.096	16.48	<.0001
Multiple Myeloma within 12 months	1.149	18.01	<.0001	1.148	18.01	<.0001	1.105	12.01	<.0001	1.150	17.07	<.0001
Breast, Prostate, Colorectal and Other Cancers within 12 months	1.080	32.94	<.0001	1.075	31.49	<.0001	1.061	23.85	<.0001	1.072	28.19	<.0001
Hyperparathyroidism within 12 months	1.019	11.67	<.0001	1.015	9.22	<.0001	1.004	2.22	0.0263	1.013	7.92	<.0001
Monoclonal Gammopathy within 12 months	1.072	10.24	<.0001	1.071	10.17	<.0001	1.075	9.90	<.0001	1.069	9.29	<.0001
Myelofibrosis within 12 months	1.201	6.21	<.0001	1.161	5.08	<.0001	1.176	5.10	<.0001	1.171	5.03	<.0001
Myelodysplastic Syndrome from 1999 to present	1.291	51.03	<.0001	1.289	50.99	<.0001	1.286	46.66	<.0001	1.290	47.80	<.0001
Prior health care utilization												
Hospitalized during the previous month	1.364	205.50	<.0001	1.291	163.92	<.0001	1.201	112.76	<.0001	1.249	133.30	<.0001
Type of patient month												
Full month HD, no events	--	--	--	1.000	reference		--	--	--	1.000	reference	
Transplant during month	--	--	--	1.586	39.70	<.0001	--	--	--	0.630	-37.20	<.0001
Death or withdrawal from dialysis during month	--	--	--	1.113	21.87	<.0001	--	--	--	0.357	-196.17	<.0001
Hospitalization only during month	--	--	--	1.245	136.29	<.0001	--	--	--	0.871	-80.48	<.0001
Modality switch during month	--	--	--	0.902	-3.19	0.0014	--	--	--	0.855	-4.52	<.0001
Transfer between facilities during month	--	--	--	1.021	6.90	<.0001	--	--	--	0.993	-2.07	0.0387
Training during month	--	--	--	1.012	0.27	0.7898	--	--	--	1.076	1.55	0.1201
Multiple events during month	--	--	--	1.195	31.87	<.0001	--	--	--	0.912	-15.47	<.0001
Unexplained low number of sessions during month	--	--	--	1.198	79.87	<.0001	--	--	--	0.812	-86.24	<.0001

*Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

Table 6

Preliminary Case-mix Analyses

Comparison of Models 3, 7, 5 and 8 for all Separately Billable Services in Bundle 1C

Impact of Modality (HD vs. PD) and Unit of Payment (per session vs. per month)

Medicare Hemodialysis (HD, n=1,943,552) and Peritoneal Dialysis (PD, n=121,573) Patient Months, 2003*

Patient Characteristic	Model 3:			Model 7:			Model 5:			Model 8:		
	log(MAC per session), HD patient months only			log(MAC per session), PD patient months only			log(MAC per month), HD patient months only			log(MAC per month), PD patient months only		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Demographics												
Age group												
<18 years	1.008	0.50	0.6165	0.516	-13.63	<.0001	0.955	-2.68	0.0073	0.377	-15.68	<.0001
18-44	1.080	31.91	<.0001	0.853	-9.01	<.0001	1.045	17.04	<.0001	0.787	-10.55	<.0001
45-59	1.057	34.94	<.0001	0.875	-10.10	<.0001	1.045	25.38	<.0001	0.823	-11.51	<.0001
60-69	1.041	26.39	<.0001	0.959	-3.20	0.0014	1.038	22.63	<.0001	0.939	-3.73	0.0002
70-79	1.000	reference		1.000	reference		1.000	reference		1.000	reference	
80+	0.955	-26.20	<.0001	0.943	-2.93	0.0034	0.950	-27.23	<.0001	0.924	-3.11	0.0019
Female	1.107	80.72	<.0001	1.197	16.60	<.0001	1.106	74.76	<.0001	1.188	12.43	<.0001
Age 18-44 years and female	1.078	21.98	<.0001	1.042	2.03	0.0426	1.077	20.24	<.0001	1.066	2.46	0.0140
Race												
White	1.000	reference		1.000	reference		1.000	reference		1.000	reference	
Native American	0.945	-12.38	<.0001	0.837	-4.64	<.0001	0.944	-11.71	<.0001	0.752	-5.80	<.0001
Asian	0.979	-5.76	<.0001	1.014	0.48	0.6306	0.993	-1.81	0.0699	0.994	-0.17	0.8668
Black	1.151	113.19	<.0001	1.146	12.70	<.0001	1.144	100.88	<.0001	1.143	9.77	<.0001
Pacific Islander	0.896	-18.53	<.0001	1.039	0.70	0.4864	0.918	-13.54	<.0001	0.980	-0.29	0.7756
Other	1.005	1.48	0.1397	0.990	-0.42	0.6714	0.999	-0.33	0.7409	0.988	-0.40	0.6914
Unknown	1.073	4.64	<.0001	1.314	1.35	0.1769	1.077	4.53	<.0001	1.343	1.14	0.2537
Hispanic												
No	1.000	reference		1.000	reference		1.000	reference		1.000	reference	
Yes	0.953	-26.69	<.0001	1.133	8.62	<.0001	0.959	-21.67	<.0001	1.164	8.21	<.0001
Unknown	1.063	6.71	<.0001	0.839	-2.63	0.0086	1.061	6.05	<.0001	0.864	-1.71	0.0877
Duration of RRT, 1st of the month												
Started RRT during month	1.599	91.54	<.0001	2.330	17.68	<.0001	0.605	-90.87	<.0001	1.043	0.68	0.4944
1st month of RRT (started RRT previous month)	1.280	56.31	<.0001	1.705	14.38	<.0001	1.222	42.58	<.0001	1.526	8.90	<.0001
2nd month of RRT	1.370	77.07	<.0001	1.369	9.42	<.0001	1.335	65.79	<.0001	1.305	6.23	<.0001
3rd month of RRT	1.254	61.19	<.0001	1.147	4.59	<.0001	1.193	44.34	<.0001	1.117	2.88	0.0039
4th month of RRT	1.136	33.60	<.0001	1.001	0.05	0.9600	1.097	22.55	<.0001	0.984	-0.42	0.6763
5th month of RRT	1.077	19.75	<.0001	0.951	-1.76	0.0779	1.048	11.64	<.0001	0.929	-2.02	0.0435
6th month of RRT	1.057	14.28	<.0001	1.017	0.57	0.5716	1.036	8.52	<.0001	1.010	0.27	0.7835
7th month of RRT	1.037	9.43	<.0001	0.979	-0.74	0.4598	1.014	3.24	0.0012	0.968	-0.89	0.3731
8th month of RRT	0.999	-0.30	0.7614	0.923	-2.70	0.0070	0.979	-4.99	<.0001	0.924	-2.09	0.0366
9th month of RRT	0.975	-6.22	<.0001	1.018	0.59	0.5580	0.965	-8.31	<.0001	1.032	0.83	0.4051
10th, 11th or 12th month of RRT	0.960	-16.89	<.0001	0.965	-1.93	0.0533	0.947	-20.76	<.0001	0.974	-1.11	0.2667
2nd year of RRT	0.948	-35.83	<.0001	0.978	-1.85	0.0639	0.935	-41.45	<.0001	0.984	-1.09	0.2778
3rd year of RRT	0.961	-24.35	<.0001	0.964	-2.89	0.0039	0.952	-28.13	<.0001	0.954	-2.92	0.0035
3 years or more of RRT	1.000	reference		1.000	reference		1.000	reference		1.000	reference	

Table 6

Preliminary Case-mix Analyses

Comparison of Models 3, 7, 5 and 8 for all Separately Billable Services in Bundle 1C

Impact of Modality (HD vs. PD) and Unit of Payment (per session vs. per month)

Medicare Hemodialysis (HD, n=1,943,552) and Peritoneal Dialysis (PD, n=121,573) Patient Months, 2003*

Patient Characteristic	Model 3:			Model 7:			Model 5:			Model 8:		
	log(MAC per session), HD patient months only			log(MAC per session), PD patient months only			log(MAC per month), HD patient months only			log(MAC per month), PD patient months only		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Body size measures												
Body surface area (DuBois): per 0.1 m ²	1.030	103.69	<.0001	1.043	18.36	<.0001	1.032	102.98	<.0001	1.041	13.96	<.0001
Body mass index (kg/m ²)												
<18.5	0.993	-2.59	0.0096	0.990	-0.43	0.6645	0.981	-6.45	<.0001	0.968	-1.08	0.2793
≥18.5	1.000	reference		1.000	reference		1.000	reference		1.000	reference	
Laboratory values												
Hematocrit at start of RRT (ME form): per 1.0 ΔHCT	0.987	-126.89	<.0001	0.979	-28.42	<.0001	0.987	-120.24	<.0001	0.978	-22.40	<.0001
Functional status and health behavior												
Inability to ambulate (ME form)	1.031	8.07	<.0001	0.807	-4.12	<.0001	1.012	2.83	0.0046	0.700	-5.35	<.0001
Inability to transfer (ME form)	0.948	-7.55	<.0001	1.008	0.09	0.9297	0.935	-8.70	<.0001	1.083	0.70	0.4864
Tobacco use - current smoker (ME form)	0.957	-18.34	<.0001	0.834	-10.08	<.0001	0.947	-21.02	<.0001	0.822	-8.53	<.0001
Alcohol Dependence within 12 months	1.039	13.47	<.0001	0.930	-2.80	0.0051	1.019	6.16	<.0001	0.916	-2.64	0.0082
Drug Dependence within 12 months	1.099	23.09	<.0001	1.028	0.69	0.4921	1.036	8.04	<.0001	0.939	-1.23	0.2173
Comorbid Conditions												
Cardiac Arrest within 12 months	1.099	21.75	<.0001	0.900	-2.35	0.0190	0.839	-37.44	<.0001	0.639	-7.76	<.0001
Congestive Heart Failure within 12 months	1.018	13.48	<.0001	1.019	1.64	0.1015	1.019	13.34	<.0001	1.002	0.15	0.8813
Cardiac Dysrhythmias within 12 months	1.032	22.45	<.0001	1.002	0.15	0.8818	1.010	6.75	<.0001	0.972	-1.73	0.0834
Ischemic Heart Disease within 12 months	0.996	-3.22	0.0013	0.985	-1.35	0.1755	0.989	-7.39	<.0001	0.974	-1.79	0.0740
Pericarditis within 12 months	1.149	28.59	<.0001	1.070	1.63	0.1034	1.118	21.26	<.0001	1.027	0.51	0.6132
Cerebrovascular Disease within 12 months	1.034	23.27	<.0001	1.055	4.14	<.0001	1.012	7.80	<.0001	1.038	2.25	0.0245
Diabetes (Primary or Contributing) within 12 months	1.000	-0.31	0.7554	0.960	-3.25	0.0011	0.973	-16.72	<.0001	0.928	-4.72	<.0001
Peripheral Vascular Disease within 12 months	1.022	16.81	<.0001	1.017	1.41	0.1589	1.017	12.24	<.0001	1.017	1.11	0.2663
Chronic Obstructive Pulmonary Disease within 12 months	1.041	27.57	<.0001	1.033	2.59	0.0095	1.026	16.20	<.0001	1.018	1.13	0.2579
AIDS within 12 months	1.017	3.34	0.0008	1.253	4.48	<.0001	1.010	1.89	0.0592	1.282	3.85	0.0001
HIV Positive Status within 12 months	1.113	19.13	<.0001	1.063	1.25	0.2126	1.110	17.36	<.0001	1.096	1.47	0.1422
Aspiration and Specified Bacterial Pneumonias within 6 months	1.092	22.61	<.0001	0.975	-0.59	0.5565	0.964	-8.72	<.0001	0.808	-3.88	0.0001
Hepatitis B within 12 months	1.028	8.84	<.0001	1.021	0.75	0.4511	1.014	3.95	<.0001	1.039	1.09	0.2771
Other Hepatitis from 1999 to present	0.981	-10.70	<.0001	1.036	2.25	0.0244	0.982	-9.71	<.0001	1.065	3.17	0.0015
Opportunistic Infections within 6 months	1.159	22.41	<.0001	1.056	0.99	0.3215	1.045	6.23	<.0001	0.891	-1.64	0.1015
Pneumococcal pneumonia, emphysema, lung abscess within 6 months	1.122	23.87	<.0001	1.236	3.99	<.0001	1.052	9.72	<.0001	1.171	2.32	0.0203
Septicemia/Shock within 6 months	1.118	65.95	<.0001	1.010	0.57	0.5715	1.056	29.91	<.0001	0.933	-3.03	0.0024
Other infections within 6 months	1.044	30.71	<.0001	1.050	4.34	<.0001	1.022	14.63	<.0001	1.046	3.07	0.0021
Gastro-Intestinal Tract Bleeding within 6 months	1.190	43.60	<.0001	1.248	5.31	<.0001	1.128	28.04	<.0001	1.218	3.68	0.0002
GI Ulcer - no hemorrhage within 6 months	1.101	30.16	<.0001	1.209	6.49	<.0001	1.065	18.30	<.0001	1.190	4.65	<.0001
Esophageal Varices within 6 months	1.271	19.65	<.0001	1.031	0.20	0.8378	1.198	13.75	<.0001	0.969	-0.17	0.8682

Table 6

Preliminary Case-mix Analyses

Comparison of Models 3, 7, 5 and 8 for all Separately Billable Services in Bundle 1C

Impact of Modality (HD vs. PD) and Unit of Payment (per session vs. per month)

Medicare Hemodialysis (HD, n=1,943,552) and Peritoneal Dialysis (PD, n=121,573) Patient Months, 2003*

Patient Characteristic	Model 3:			Model 7:			Model 5:			Model 8:		
	log(MAC per session), HD patient months only			log(MAC per session), PD patient months only			log(MAC per month), HD patient months only			log(MAC per month), PD patient months only		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Acquired Hemolytic Anemias within 12 months	1.071	15.19	<.0001	1.344	6.79	<.0001	1.062	12.43	<.0001	1.361	5.52	<.0001
Hereditary Hemolytic Anemias from 1999 to present	1.096	24.41	<.0001	1.152	4.38	<.0001	1.093	22.01	<.0001	1.140	3.16	0.0016
Sickle-Cell Anemia from 1999 to present	1.171	17.92	<.0001	1.232	2.52	0.0119	1.170	16.59	<.0001	1.264	2.20	0.0276
Other Anemias within two years	2.226	3.71	0.0002	1.000	.	.	2.090	3.18	0.0015	1.000	.	.
Leukemia within 12 months	1.150	17.06	<.0001	1.236	2.92	0.0035	1.112	12.11	<.0001	1.226	2.19	0.0284
Lung, Upper Digestive Tract, and Other Severe Cancers within 12 months	1.100	17.89	<.0001	0.926	-1.39	0.1636	1.038	6.46	<.0001	0.848	-2.34	0.0190
Lymphatic System, Head, and Other Major Cancers within 12 months	1.027	1.01	0.3127	1.830	1.63	0.1033	1.016	0.55	0.5832	1.982	1.44	0.1498
Lymphoma within two years	1.142	18.43	<.0001	1.185	2.76	0.0057	1.122	14.82	<.0001	1.199	2.31	0.0208
Metastatic Cancers within 12 months	1.117	21.05	<.0001	0.973	-0.53	0.5976	1.084	14.32	<.0001	0.943	-0.89	0.3714
Multiple Myeloma within 12 months	1.149	18.01	<.0001	1.275	3.71	0.0002	1.105	12.01	<.0001	1.300	3.13	0.0018
Breast, Prostate, Colorectal and Other Cancers within 12 months	1.080	32.94	<.0001	1.190	8.53	<.0001	1.061	23.85	<.0001	1.207	7.21	<.0001
Hyperparathyroidism within 12 months	1.019	11.67	<.0001	1.052	4.07	<.0001	1.004	2.22	0.0263	1.074	4.49	<.0001
Monoclonal Gammopathy within 12 months	1.072	10.24	<.0001	1.270	3.83	0.0001	1.075	9.90	<.0001	1.282	3.11	0.0019
Myelofibrosis within 12 months	1.201	6.21	<.0001	2.558	2.01	0.0446	1.176	5.10	<.0001	2.302	1.39	0.1638
Myelodysplastic Syndrome from 1999 to present	1.291	51.03	<.0001	1.547	10.25	<.0001	1.286	46.66	<.0001	1.640	9.08	<.0001
Prior health care utilization												
Hospitalized during the previous month	1.364	205.50	<.0001	1.103	7.29	<.0001	1.201	112.76	<.0001	0.954	-2.71	0.0066

*Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

Table 7

Preliminary Case-mix Analyses
Comparison of Models 3 and 3E: Impact of Adjusting for Prior EPO Dose Response

Medicare Hemodialysis Patient Months, 2003 (n=1,943,552)*

Patient Characteristic	Model 3: log(MAC/session) for all SB services in bundle 1C			Model 3E: log(MAC/session) for all SB services in bundle 1C, includes measure of prior EPO dose response		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Demographics						
Age group						
<18 years	1.008	0.50	0.6165	0.954	-3.09	0.002
18-44	1.080	31.91	<.0001	1.040	16.62	<.0001
45-59	1.057	34.94	<.0001	1.026	16.57	<.0001
60-69	1.041	26.39	<.0001	1.025	16.68	<.0001
70-79	1.000	reference		1.000	reference	
80+	0.955	-26.20	<.0001	0.969	-18.38	<.0001
Female	1.107	80.72	<.0001	1.084	66.35	<.0001
Age 18-44 years and female	1.078	21.98	<.0001	1.056	16.72	<.0001
Race						
White	1.000	reference		1.000	reference	
Native American	0.945	-12.38	<.0001	0.960	-9.18	<.0001
Asian	0.979	-5.76	<.0001	0.977	-6.68	<.0001
Black	1.151	113.19	<.0001	1.142	111.01	<.0001
Pacific Islander	0.896	-18.53	<.0001	0.909	-16.72	<.0001
Other	1.005	1.48	0.1397	0.998	-0.79	0.4273
Unknown	1.073	4.64	<.0001	1.085	5.57	<.0001
Hispanic						
No	1.000	reference		1.000	reference	
Yes	0.953	-26.69	<.0001	0.971	-17.21	<.0001
Unknown	1.063	6.71	<.0001	1.060	6.65	<.0001
Duration of RRT, 1st of the month						
Started RRT during month	1.599	91.54	<.0001	1.525	85.11	<.0001
1st month of RRT (started RRT previous month)	1.280	56.31	<.0001	1.236	50.02	<.0001
2nd month of RRT	1.370	77.07	<.0001	1.316	69.65	<.0001
3rd month of RRT	1.254	61.19	<.0001	1.204	52.09	<.0001
4th month of RRT	1.136	33.60	<.0001	1.093	24.16	<.0001
5th month of RRT	1.077	19.75	<.0001	1.037	10	<.0001
6th month of RRT	1.057	14.28	<.0001	1.018	4.81	<.0001
7th month of RRT	1.037	9.43	<.0001	0.999	-0.23	0.8146
8th month of RRT	0.999	-0.30	0.7614	0.962	-10	<.0001
9th month of RRT	0.975	-6.22	<.0001	0.938	-16.57	<.0001
10th, 11th or 12th month of RRT	0.960	-16.89	<.0001	0.918	-35.97	<.0001
2nd year of RRT	0.948	-35.83	<.0001	0.926	-52.5	<.0001
3rd year of RRT	0.961	-24.35	<.0001	0.980	-12.98	<.0001
3 years or more of RRT	1.000	reference		1.000	reference	
Body size measures						
Body surface area (DuBois): per 0.1 m ²	1.030	103.69	<.0001	1.022	79.54	<.0001
Body mass index (kg/m ²)						
<18.5	0.993	-2.59	0.0096	0.989	-3.98	<.0001
≥18.5	1.000	reference		1.000	reference	
Laboratory values						
Hematocrit at start of RRT (ME form): per 1.0 ΔHCT	0.987	-126.89	<.0001	0.990	-101.87	<.0001
Functional status and health behavior						
Inability to ambulate (ME form)	1.031	8.07	<.0001	1.026	7.01	<.0001
Inability to transfer (ME form)	0.948	-7.55	<.0001	0.954	-6.88	<.0001
Tobacco use - current smoker (ME form)	0.957	-18.34	<.0001	0.966	-14.9	<.0001
Alcohol Dependence within 12 months	1.039	13.47	<.0001	1.031	11.3	<.0001
Drug Dependence within 12 months	1.099	23.09	<.0001	1.071	17.45	<.0001
Comorbid Conditions						
Cardiac Arrest within 12 months	1.099	21.75	<.0001	1.079	18.04	<.0001
Congestive Heart Failure within 12 months	1.018	13.48	<.0001	1.010	8.03	<.0001
Cardiac Dysrhythmias within 12 months	1.032	22.45	<.0001	1.021	15.03	<.0001

Table 7

Preliminary Case-mix Analyses
Comparison of Models 3 and 3E: Impact of Adjusting for Prior EPO Dose Response

Medicare Hemodialysis Patient Months, 2003 (n=1,943,552)*

Patient Characteristic	Model 3: log(MAC/session) for all SB services in bundle 1C			Model 3E: log(MAC/session) for all SB services in bundle 1C, includes measure of prior EPO dose response		
	Multiplier	t Value	Pr > t	Multiplier	t Value	Pr > t
Ischemic Heart Disease within 12 months	0.996	-3.22	0.0013	0.997	-2.24	0.0252
Pericarditis within 12 months	1.149	28.59	<.0001	1.114	23.06	<.0001
Cerebrovascular Disease within 12 months	1.034	23.27	<.0001	1.028	20.3	<.0001
Diabetes (Primary or Contributing) within 12 months	1.000	-0.31	0.7554	0.997	-1.89	0.0588
Peripheral Vascular Disease within 12 months	1.022	16.81	<.0001	1.014	11.68	<.0001
Chronic Obstructive Pulmonary Disease within 12 months	1.041	27.57	<.0001	1.032	22.39	<.0001
AIDS within 12 months	1.017	3.34	0.0008	1.017	3.54	0.0004
HIV Positive Status within 12 months	1.113	19.13	<.0001	1.080	14.29	<.0001
Aspiration and Specified Bacterial Pneumonias within 6 months	1.092	22.61	<.0001	1.086	21.85	<.0001
Hepatitis B within 12 months	1.028	8.84	<.0001	1.030	9.72	<.0001
Other Hepatitis from 1999 to present	0.981	-10.70	<.0001	0.983	-10.02	<.0001
Opportunistic Infections within 6 months	1.159	22.41	<.0001	1.133	19.68	<.0001
Pneumococcal pneumonia, emphysema, lung abscess within 6 months	1.122	23.87	<.0001	1.103	21.2	<.0001
Septicemia/Shock within 6 months	1.118	65.95	<.0001	1.107	62.19	<.0001
Other infections within 6 months	1.044	30.71	<.0001	1.040	29.53	<.0001
Gastro-Intestinal Tract Bleeding within 6 months	1.190	43.60	<.0001	1.169	40.71	<.0001
GI Ulcer - no hemorrhage within 6 months	1.101	30.16	<.0001	1.088	27.24	<.0001
Esophageal Varices within 6 months	1.271	19.65	<.0001	1.193	14.96	<.0001
Acquired Hemolytic Anemias within 12 months	1.071	15.19	<.0001	1.054	11.94	<.0001
Hereditary Hemolytic Anemias from 1999 to present	1.096	24.41	<.0001	1.045	12.19	<.0001
Sickle-Cell Anemia from 1999 to present	1.171	17.92	<.0001	1.092	10.29	<.0001
Other Anemias within two years	2.226	3.71	0.0002	1.798	2.82	0.0048
Leukemia within 12 months	1.150	17.06	<.0001	1.126	15.05	<.0001
Lung, Upper Digestive Tract, and Other Severe Cancers within 12 months	1.100	17.89	<.0001	1.078	14.54	<.0001
Lymphatic System, Head, and Other Major Cancers within 12 months	1.027	1.01	0.3127	1.023	0.87	0.3834
Lymphoma within two years	1.142	18.43	<.0001	1.104	14.25	<.0001
Metastatic Cancers within 12 months	1.117	21.05	<.0001	1.096	17.99	<.0001
Multiple Myeloma within 12 months	1.149	18.01	<.0001	1.121	15.3	<.0001
Breast, Prostate, Colorectal and Other Cancers within 12 months	1.080	32.94	<.0001	1.067	28.71	<.0001
Hyperparathyroidism within 12 months	1.019	11.67	<.0001	1.015	9.99	<.0001
Monoclonal Gammopathy within 12 months	1.072	10.24	<.0001	1.061	9.04	<.0001
Myelofibrosis within 12 months	1.201	6.21	<.0001	1.187	6	<.0001
Myelodysplastic Syndrome from 1999 to present	1.291	51.03	<.0001	1.198	37.27	<.0001
Prior health care utilization						
Hospitalized during the previous month	1.364	205.50	<.0001	1.335	198.29	<.0001
Prior EPO dose response						
Ratio of average EPO dose to average hematocrit during April-June 2002: per 1.0 Δ(EPO dose / hematocrit)	--	--	--	1.278	374.97	<.0001

*Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

Table 8

Preliminary Case-mix Analyses
R-squared Values and Variation in Predicted and Actual Payments for Alternative Models¹

Medicare Dialysis Patients, 2003

Model	Separately billable (SB) bundle components	Payments per month or per session	Adjust for type of month	Adjust for prior EPO dose response	Modality	Exclude possible outliers**	Number of patient months	R ²	Average payment	Variation in predicted payments (SD)	Variation in actual payments (SD)
1	EPO and iron	session	N	N	HD	N	1,943,552	6.83%	\$ 72.74	\$ 18.40	\$ 70.41
1T	EPO and iron	session	N	N	HD	Y	1,924,131	8.97%	\$ 69.03	\$ 17.12	\$ 57.15
2	EPO, iron, vitamin D and related labs (1A)	session	N	N	HD	N	1,943,552	6.76%	\$ 93.74	\$ 19.86	\$ 76.35
3	Selected injectables and all ESRD labs (1C)	session	N	N	HD	N	1,943,552	7.43%	\$ 101.37	\$ 22.24	\$ 81.60
3E	Selected injectables and all ESRD labs (1C)	session	N	Y	HD	N	1,943,552	15.48%	\$ 101.37	\$ 32.10	\$ 81.60
4	Selected injectables and all ESRD labs (1C)	session	Y	N	HD	N	1,943,552	8.34%	\$ 101.37	\$ 23.56	\$ 81.60
5	Selected injectables and all ESRD labs (1C)	month	N	N	HD	N	1,943,552	4.54%	\$ 1,178.53	\$ 191.76	\$ 900.27
6	Selected injectables and all ESRD labs (1C)	month	Y	N	HD	N	1,943,552	5.83%	\$ 1,178.53	\$ 217.34	\$ 900.27
7	Selected injectables and all ESRD labs (1C)	session	N	N	PD	N	121,573	0.34%	\$ 42.23	\$ 5.35	\$ 92.46
8	Selected injectables and all ESRD labs (1C)	month	N	N	PD	N	121,573	0.78%	\$ 485.27	\$ 52.50	\$ 594.95

*Based on models of log(payments). Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

**Excluded months in which payments exceeded the 99th percentile.

Table 9

**Preliminary Case-mix Analyses
Distribution of Monthly Prediction Errors for Alternative Models***

Medicare Dialysis Patients, 2003

Model	Separately billable (SB) bundle components	Number of patient months	Percentile of Patient Months**											
			Std Dev	Minimum	1st	5th	10th	25th	50th	75th	90th	95th	99th	Maximum
1	EPO and iron	1,943,552	\$ 67.47	-\$384	-\$62	-\$40	-\$31	-\$16	\$8	\$46	\$98	\$144	\$264	\$3,924
1T	EPO and iron	1,924,131	\$ 54.37	-\$313	-\$59	-\$38	-\$30	-\$15	\$9	\$45	\$94	\$134	\$212	\$299
2	All SB, 1A	1,943,552	\$ 72.92	-\$285	-\$76	-\$53	-\$42	-\$22	\$6	\$46	\$100	\$147	\$274	\$6,036
3	All SB, 1C	1,943,552	\$ 77.73	-\$301	-\$82	-\$57	-\$45	-\$24	\$4	\$46	\$103	\$153	\$289	\$6,929
3E	All SB, 1C	1,943,552	\$ 74.39	-\$594	-\$93	-\$57	-\$44	-\$23	\$5	\$44	\$97	\$141	\$267	\$6,924
4	All SB, 1C	1,943,552	\$ 77.17	-\$321	-\$84	-\$57	-\$45	-\$24	\$5	\$46	\$102	\$151	\$286	\$6,920
5	All SB, 1C	1,943,552	\$ 870.82	-\$2,596	-\$923	-\$667	-\$533	-\$285	\$68	\$573	\$1,245	\$1,820	\$3,385	\$34,088
6	All SB, 1C	1,943,552	\$ 864.16	-\$2,870	-\$921	-\$666	-\$531	-\$285	\$63	\$563	\$1,229	\$1,799	\$3,358	\$34,081
7	All SB, 1C	121,573	\$ 91.88	-\$82	-\$26	-\$19	-\$16	-\$9	\$6	\$34	\$74	\$111	\$227	\$14,459
8	All SB, 1C	121,573	\$ 589.24	-\$675	-\$261	-\$198	-\$166	-\$84	\$104	\$455	\$925	\$1,344	\$2,402	\$34,515

*Based on models of log(payments). Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

**These columns show the percent of patient months having prediction errors that are less than or equal to the dollar amount shown. For example, the 75th percentile for Model 1 indicates that 75% of patient months have prediction errors that are ≤\$45.76 per session; the remaining 25 percent of patient months have prediction errors that exceed \$45.76 per session.

Models:

- # 1: \$/session for EPO and iron (HD only)
- # 1T: \$/session for EPO and iron (HD only), exclude possible outlier months (i.e., \$/session exceed the 99th percentile)
- # 2: \$/session for all separately billable (SB) services in bundle 1A (HD only)
- # 3: \$/session for all SB services in bundle 1C (HD only)
- # 3E: \$/session for all SB services in bundle 1C (HD only), adjust for measure of prior EPO dose response
- # 4: \$/session for all SB services in bundle 1C, adjust for type of month (HD only)
- # 5: \$/month for all SB services in bundle 1C (HD only)
- # 6: \$/month for all SB services in bundle 1C, adjust for type of month (HD only)
- # 7: \$/session for all SB services in bundle 1C (PD only)
- # 8: \$/month for all SB services in bundle 1C (PD only)

Table 10

Preliminary Case-mix Analyses

Correlation of Monthly Prediction Errors Over Time for Individual Patients, for Alternative Models*

Medicare Dialysis Patients, 2003

			Correlation Coefficients:										
			Comparison of Prediction Error (dollars) for Current Month Versus:										
				2	3	4	5	6	7	8	9	10	11
Model	Separately billable (SB) bundle components	Number of patient months	Previous month	months ago	months ago	months ago	months ago	months ago	months ago	months ago	months ago	months ago	months ago
1	EPO and iron	1,943,552	0.77	0.64	0.59	0.55	0.52	0.50	0.47	0.45	0.43	0.42	0.40
1T	EPO and iron	1,924,131	0.78	0.62	0.55	0.52	0.49	0.47	0.44	0.42	0.41	0.39	0.38
2	All SB, 1A	1,943,552	0.76	0.64	0.59	0.55	0.52	0.50	0.47	0.45	0.44	0.42	0.40
3	All SB, 1C	1,943,552	0.73	0.62	0.57	0.53	0.50	0.48	0.45	0.43	0.42	0.40	0.38
3E	All SB, 1C	1,943,552	0.69	0.54	0.50	0.46	0.44	0.43	0.38	0.36	0.37	0.34	0.32
4	All SB, 1C	1,943,552	0.73	0.62	0.56	0.52	0.50	0.48	0.45	0.43	0.42	0.40	0.38
5	All SB, 1C	1,943,552	0.75	0.63	0.58	0.54	0.52	0.50	0.47	0.44	0.44	0.41	0.40
6	All SB, 1C	1,943,552	0.76	0.64	0.59	0.55	0.52	0.50	0.47	0.45	0.44	0.41	0.41
7	All SB, 1C	121,573	0.20	0.18	0.17	0.15	0.13	0.12	0.10	0.09	0.09	0.06	0.02
8	All SB, 1C	121,573	0.42	0.40	0.38	0.37	0.33	0.33	0.32	0.30	0.31	0.27	0.33

*Based on models of log(payments). Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

Models:

- # 1: \$/session for EPO and iron (HD only)
- # 1T: \$/session for EPO and iron (HD only), exclude possible outlier months (i.e., \$/session exceed the 99th percentile)
- # 2: \$/session for all separately billable (SB) services in bundle 1A (HD only)
- # 3: \$/session for all SB services in bundle 1C (HD only)
- # 3E: \$/session for all SB services in bundle 1C (HD only), adjust for measure of prior EPO dose response
- # 4: \$/session for all SB services in bundle 1C, adjust for type of month (HD only)
- # 5: \$/month for all SB services in bundle 1C (HD only)
- # 6: \$/month for all SB services in bundle 1C, adjust for type of month (HD only)
- # 7: \$/session for all SB services in bundle 1C (PD only)
- # 8: \$/month for all SB services in bundle 1C (PD only)

Table 11

**Preliminary Case-mix Analyses
Distinguishing Between Three Sources of Unexplained Variation in Payments:
Facility-level, Patient-level and Month-level Variation***

Medicare Hemodialysis Patients, 2003 (n=39,932)**

Source of variation	Mean	Standard deviation*** without case-mix adjustment	Standard deviation*** with case-mix adjustment
EPO and iron only			
Facility	\$ 72.73	\$ 11.16	\$ 10.28
Patient	\$ 72.73	\$ 39.80	\$ 37.23
Month	\$ 72.73	\$ 39.03	\$ 38.60
EPO, iron, vitamin D and related labs (Bundle 1A)			
Facility	\$ 93.73	\$ 17.19	\$ 15.78
Patient	\$ 93.73	\$ 43.86	\$ 41.09
Month	\$ 93.73	\$ 40.67	\$ 40.25
Selected injectables and all ESRD labs (Bundle 1C)			
Facility	\$ 101.36	\$ 17.20	\$ 15.94
Patient	\$ 101.36	\$ 46.06	\$ 42.65
Month	\$ 101.36	\$ 40.96	\$ 40.43

*Based on mixed models of log(MAC per session) which adjust for demographic characteristics, duration of RRT, body size measures, hematocrit at start of RRT, functional status and health behaviors, comorbid conditions and hospitalization in the prior month. Includes patient months with 1-20 Medicare hemodialysis-equivalent dialysis sessions. Excludes patient months with missing data for one or more patient characteristics.

**Based on a 2% random sample of the complete 2003 data due to computation limitations. Results were similar based on multiple 2% random samples.

***The analysis was performed on log-linear scale, and then transformed back approximately to \$ scale for interpretability. There is no accounting for budget neutrality.