

Supplemental Materials

Table S1. Characteristics of the facilities in three smaller size categories

Facility characteristics	Number of stations in the facility		
	1-5	6-10	11-15
Number of facilities (n)	45	491	1,267
For-profit (%)	77.8	84.1	91.5
Chain ownership (%)			
DCI	4.4	4.7	4.1
DaVita	17.8	28.7	33.1
Fresenius	11.1	28.3	37.4
Other chains	15.6	11.8	10.9
No chain affiliation	51.1	26.5	14.5
Median full-time RNs + LPNs per 100 patients	11.5	8.6	7.0
Facility zip-code socioeconomic status, mean±SD			
Median annual household income (\$1000)	41.6±14.5	39.4±14.4	41.8±15.0
Percentage of persons in poverty	13.5±9.7	12.9±7.9	12.4±7.9
Percentage of black population	13.3±20.0	11.4±18.7	13.4±19.4
Percentage of persons with high-school education	81.4±11.0	79.2±9.9	79.8±10.5
Geographic area ^a , n (%)			
Urban	33 (73.3%)	222 (45.2%)	821 (64.8%)
Large rural	3 (6.7%)	116 (23.6%)	253 (20.0%)
Small rural	8 (17.8%)	118 (24.0%)	160 (12.6%)
Isolated rural	1 (2.2%)	35 (7.2%)	33 (2.6%)
Census region (%)			
Northeast	13.3	10.2	11.1
Midwest	35.6	34.4	27.2
South	26.7	39.5	47.4
West	24.4	15.9	14.3

Abbreviation: RN, Registered Nurses; LPN, Licensed Practical Nurses.

^a Based on the four-category classification of Rural-Urban Commuting Area Codes (RUCAs).^{24,25}

Table S2. Characteristics of the patients in three smaller size categories

Patient characteristics	Facility size category		
	1-5 Stations	6-10 Stations	11-15 Stations
Number of patients (n)	918	19,259	70,640
Male sex (%)	56.5	55.7	55.2
Age, mean±SD (yrs)	67.3±14.3	65.0±14.6	64.0±14.8
BMI, mean±SD (kg/m ²)	29.5±8.3	29.0±7.8	29.0±7.8
eGFR, mean±SD (ml/min/1.73m ²)	11.6±5.2	11.0±4.9	10.9±4.9
Socioeconomic status			
Employed (%)	90.2	85.4	84.8
Private insurance (%)	54.4	51.5	50.5
No insurance (%)	8.7	7.1	8.8
Race/ethnicity-specific zip-code income (\$1000)	41.6±15.4	38.5±15.1	40.4±16.4
Current smoker (%)	6.2	7.0	6.5
Cause of ESRD (%)			
Diabetes	46.0	46.2	46.5
Hypertension	28.8	28.6	29.7
Glomerulonephritis	4.5	6.3	6.2
Other	16.1	14.4	13.9
Unknown	4.8	4.5	3.7
Comorbidity			
Hypertension (%)	84.0	83.7	83.8
Diabetes (%)	58.0	54.8	53.8
Cardiac failure (%)	36.1	35.2	33.9
Atherosclerotic heart disease (%)	28.5	26.5	24.2
Cerebrovascular disease (%)	13.8	11.0	9.5
Peripheral vascular disease (%)	15.9	16.0	14.7
Chronic obstructive pulmonary disease (%)	13.9	11.1	10.0
Pre-ESRD care			
Use of ESA before ESRD (%)	25.2	26.5	28.3
Receipt of pre-ESRD nephrologist care (%) ^a	46.6	56.2	58.8
AVF for first dialysis (%) ^a	11.8	13.7	14.9

^a Patients who completed the new CMS Medical Evidence form since 2005.

Table S3. Death and censoring events in the primary and sensitivity analyses for 1-year mortality

Number of stations	Total patients	Primary analyses				Sensitivity analyses				
		Death (%) ^a	Types of censoring events			Death (%) ^c	Types of censoring events			
			Transplant (%)	Modality switch (%)	Others (%) ^b		Transplant (%)	Modality switch (%)	Transfer out (%)	Others (%) ^b
1-5	918	30.4	1.1	2.3	2.1	27.7	1.0	2.3	13.4	2.0
6-10	19259	24.1	2.5	2.2	1.9	22.6	2.4	2.0	11.1	1.9
11-15	70640	21.2	2.6	2.1	1.7	20.0	2.4	2.0	9.9	1.7
16-20	118042	20.0	2.3	1.9	1.8	18.9	2.2	1.8	10.2	1.7
21-25	89149	19.5	2.3	1.9	1.7	18.4	2.2	1.8	9.6	1.7
26-30	41145	17.9	2.3	1.8	1.5	17.0	2.2	1.7	9.5	1.5
31-35	19826	18.2	1.8	1.8	1.3	17.2	1.7	1.7	9.7	1.3
36-45	17911	17.4	1.9	2.1	1.5	16.4	1.8	2.0	10.2	1.5
46-60	6772	16.5	1.5	1.7	1.3	15.5	1.5	1.7	8.3	1.3
≥61	1412	17.8	1.8	2.3	2.0	17.1	1.7	2.3	9.0	2.1

^a Include deaths after transfer out of the facility within one year after the first 90 days of ESRD onset.

^b Include events such as kidney function recovery and loss of follow-up.

^c Not include deaths after transfer out of the facilities because their follow-up times were censored when they were transferred.

Table S4. Unadjusted and adjusted hazard ratios of 1-year mortality in the sensitivity analyses with follow-up time censored at transfer out

Number of stations	All patients		White		Black		Hispanic	
	HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P
Unadjusted results								
1-5	1.87 (1.43-2.43)	<0.001	1.36 (1.01-1.83)	0.044	2.56 (1.92-3.41)	<0.001	1.73 (1.11-2.71)	0.016
6-10	1.42 (1.33-1.52)	<0.001	1.09 (1.02-1.16)	0.007	1.57 (1.38-1.80)	<0.001	1.29 (1.03-1.61)	0.027
11-15	1.21 (1.16-1.27)	<0.001	1.01 (0.96-1.05)	0.82	1.19 (1.10-1.29)	<0.001	1.06 (0.93-1.21)	0.37
16-20	1.14 (1.09-1.19)	<0.001	1.01 (0.97-1.06)	0.62	1.12 (1.06-1.19)	<0.001	1.11 (1.00-1.22)	0.044
21-25	1.10 (1.05-1.15)	<0.001	1.01 (0.97-1.06)	0.64	1.16 (1.09-1.23)	<0.001	1.01 (0.91-1.12)	0.82
26-30	1 (Reference)		1 (Reference)		1 (Reference)		1 (Reference)	
31-35	1.02 (0.95-1.09)	0.66	1.07 (1.00-1.15)	0.054	1.07 (0.98-1.15)	0.12	1.06 (0.89-1.28)	0.51
36-45	0.97 (0.90-1.05)	0.48	0.97 (0.89-1.06)	0.51	1.06 (0.97-1.16)	0.20	1.03 (0.89-1.20)	0.66
46-60	0.90 (0.80-1.00)	0.057	1.00 (0.88-1.13)	0.97	0.96 (0.85-1.08)	0.51	0.87 (0.62-1.21)	0.40
≥61	1.01 (0.88-1.17)	0.85	1.10 (1.02-1.19)	0.019	1.25 (1.04-1.51)	0.017	0.84 (0.70-1.02)	0.075
Adjusted results ^a								
1-5	1.33 (1.07-1.66)	0.011	1.26 (0.99-1.60)	0.063	1.74 (1.27-2.40)	0.001	1.12 (0.71-1.78)	0.62
6-10	1.17 (1.11-1.24)	<0.001	1.10 (1.03-1.17)	0.003	1.42 (1.29-1.56)	<0.001	1.24 (1.02-1.50)	0.027
11-15	1.06 (1.02-1.10)	0.002	1.03 (0.98-1.07)	0.28	1.14 (1.06-1.23)	<0.001	1.06 (0.94-1.19)	0.33
16-20	1.04 (1.01-1.08)	0.015	1.01 (0.97-1.06)	0.63	1.10 (1.04-1.16)	0.001	1.06 (0.97-1.16)	0.17
21-25	1.05 (1.02-1.09)	0.005	1.02 (0.98-1.07)	0.36	1.13 (1.06-1.20)	<0.001	1.00 (0.91-1.09)	0.92
26-30	1 (Reference)		1 (Reference)		1 (Reference)		1 (Reference)	
31-35	1.08 (1.02-1.13)	0.005	1.10 (1.03-1.18)	0.007	1.07 (1.00-1.15)	0.068	1.13 (0.97-1.31)	0.13
36-45	1.02 (0.97-1.08)	0.41	0.98 (0.91-1.05)	0.55	1.09 (1.00-1.18)	0.051	1.08 (0.97-1.22)	0.17
46-60	0.96 (0.87-1.05)	0.37	1.00 (0.88-1.13)	0.97	0.97 (0.86-1.10)	0.62	0.92 (0.74-1.14)	0.43
≥61	1.13 (0.93-1.37)	0.21	1.22 (0.97-1.53)	0.089	1.20 (1.00-1.44)	0.051	0.96 (0.71-1.30)	0.78

^a From the fully-adjusted model (model 4); See the footnote (d) in Table 3 for the variable list. The fully-adjusted model for all patients was additionally adjusted for three race/ethnicity subgroups.