



Treatment modalities

I dwell in Possibility—
A fairer House than Prose—
More numerous of Windows—
Superior—for Doors—

Emily Dickinson
"I dwell in Possibility"



The two major therapies for end-stage renal disease are dialysis and kidney transplantation. During hemodialysis an extracorporeal circuit with a dialysis membrane is used to filter and clean the blood; peritoneal dialysis uses the body's own peritoneal cavity to transfer

solutes and toxins between the blood and the peritoneal dialysis fluid.

The incident hemodialysis population has grown seven-fold since 1978, reaching 97,143 in 2005, while the number of new peritoneal dialysis patients peaked at 9,407 in 1995 and is now 6,875. The incident peritoneal dialysis population now accounts for 6.6 percent of new dialysis patients, a ratio that continues to decline from its 1982–1985 peak of close to 15 percent.

The number of patients who receive a kidney transplant as their first ESRD therapy reached 2,424 in 2005, and since 1995 has grown an average of 7.6 percent each year. In the prevalent population, the number of patients waiting to receive a transplant increased from 9,447 in 1988 to 64,942 in 2005, with an annual growth of 6.5 percent over the last ten years.

Hemodialysis patients are older than those on peritoneal dialysis. Transplant patients, as expected, are youngest, with 50 percent age 45–64.

In the incident hemodialysis population, Medicare only, Medicare plus Medicaid, and Medicare under HMOs or managed care plans cover 75 percent of patients, while employer group health plans (EGHPs) and Medicare as secondary payor cover the remaining 25 percent. In the peritoneal dialysis population, in contrast, the distribution in 2005 was 65 and 35 percent. Medicare covers only 38 percent of transplant patients; 29 percent have EGHP coverage, and 33 percent are covered by other insurers. These differences may significantly affect both patient

benefits, particularly those related to prescription drugs, and provider revenue streams from services such as dialysis therapy, injectables, treatments and medications for transplantation, and diagnostic testing.

Maps of incident rates by modality illustrate nationwide changes since 1995, changes which may reflect the recent consolidation of ESRD providers, their varying policies regarding therapy, and their individual likelihoods of using dialytic and transplant therapies in the incident population. The rates may also reflect changes in access to organs for transplantation. Changes in peritoneal dialysis use, for example, show distinct geographic patterns that are different from the distribution of the hemodialysis population. Although there has been a general decline in use of this therapy, there are notable exceptions, including the Dakotas, Oklahoma, Louisiana, Mississippi, and Alabama, where use has increased.

Trends similar to those in the incident population are noted for prevalence as well. The rate of decline of the prevalent peritoneal dialysis population has slowed, with an overall increase of 1.3 percent per year between 2004 and 2005, while growth in the prevalent transplant population has grown 5.5–6.0 percent per year since 2001. Differences in payor distribution continue here, but are less dramatic than those seen with incident patients. Eighty-one percent of hemodialysis patients have Medicare as their primary payor, compared to 77 percent of those on peritoneal dialysis and 53 of those in the transplant population.

As shown in maps of ESRD prevalence, use of peritoneal dialysis has fallen across the U.S. since 1994–1995—as much as 67 percent in some areas. Similar to patterns seen in the incident peritoneal dialysis distribution, rates of prevalence are highest in the south central U.S.

The growing consolidation of providers into larger chains has long been clear; chains represented less than 10 percent of patients in the early 1990s, but more than 60 percent by 2005. Two large chains now treat the great majority of U.S. patients. Hospital-based and independent units have been quite stable, treating some 20 percent of new hemodialysis patients in the last ten years. Their number of peritoneal dialysis patients, however, has fallen, and use of this therapy varies considerably by provider group. Further consolidation may raise concerns over modality choice and its relation to provider practices.

With peritoneal dialysis long the dominant home therapy, home hemodialysis has received little attention in the past 15 years. Its use peaked in 1985, with 5,814 prevalent patients. A number of government programs, paying home aids to help deliver the therapy, ended soon afterwards, contributing to a steady decline in use

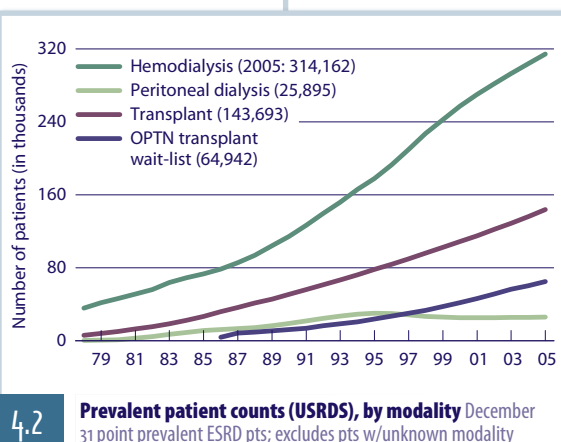
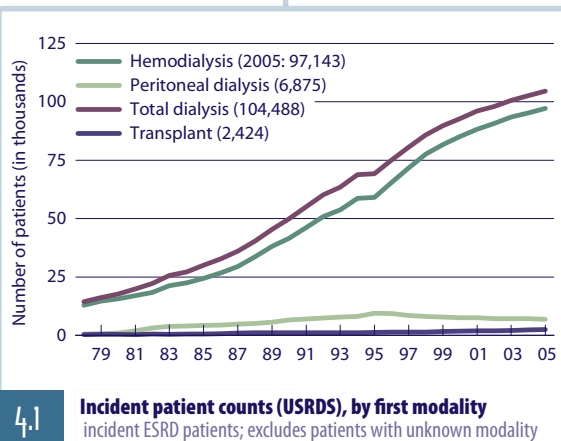
until by 2002 there were only 1,759 patients. Now, however, there appears to be renewed interest in the use of daily home therapy. The home hemodialysis population reached 2,105 in 2005, and new products are being introduced for the delivery of this therapy. And a

new NIH study is comparing daily or overnight home hemodialysis to in-center therapy, testing safety and efficacy.

During the past decade, then, modality use has changed considerably. Hemodialysis is still dominant, while use of peritoneal dialysis rises in fewer areas of the country. Differences in the accumulation of patients on different modalities need to be carefully considered, not only from the vantage point of quality of care, but in terms of payor distribution and incentives, which may influence modality choice and the availability of services. Use of home hemodialysis appears to be resurging, based on new applications of daily home therapies such as short treatments of

2–3 hours instead of overnight therapy. These trends will require increased evaluation in the future. ❖

figure 4.1 incident ESRD patients; peritoneal dialysis counts include CAPD & CCPD only. **figure 4.2** December 31 point prevalent patients; peritoneal dialysis counts include CAPD & CCPD only. OPTN was created in 1986.



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highlights

table 4.b The incidence of ESRD per million population reached 317 in 2005 for hemodialysis, 22.5 for peritoneal dialysis, and 7.1 for transplant. **table 4.e** The prevalence of ESRD among African Americans on hemodialysis reached 3,879 in 2005, six times that found among whites, and nearly twice as high as the rate in the Native American population. **figure 4.13** Overall, 7.2 percent of incident dialysis patients began treatment on home hemodialysis in 2004–2005.

	Number of patients				Percent of total (column percent)			
	HD	PD	Tx	Unk.	HD	PD	Tx	Unk.
0-19	665	401	235	24	0.7	5.8	9.7	5.1
20-44	11,672	1,260	694	80	12.0	18.3	28.6	17.0
45-64	35,109	2,879	1,227	230	36.1	41.9	50.6	48.9
65-74	23,065	1,327	239	80	23.7	19.3	9.9	17.0
75+	26,630	1,008	29	56	27.4	14.7	1.2	11.9
Unknown	*	.	.	.	*	.	.	.
Male	53,995	3,719	1,381	258	55.6	54.1	57.0	54.9
Female	43,142	3,156	1,042	204	44.4	45.9	43.0	43.4
Unknown	*	.	*	*	*	.	*	*
White	62,757	4,941	1,851	198	64.6	71.9	76.4	42.1
African American	28,541	1,432	202	53	29.4	20.8	8.3	11.3
Native American	1,116	75	*	*	1.2	1.1	*	*
Asian	3,626	339	65	*	3.7	4.9	2.7	*
Other/unknown	1,103	88	299	209	1.1	1.3	12.3	44.5
Hispanic	12,811	756	126	16	13.2	11.0	5.2	3.4
Non-Hispanic	84,332	6,119	2,298	454	86.8	89.0	94.8	96.6
Diabetes	43,589	2,776	442	44	44.9	40.4	18.2	9.4
Hypertension	26,857	1,524	218	23	27.7	22.2	9.0	4.9
Glomerulonephritis	6,715	977	390	18	6.9	14.2	16.1	3.8
Cystic kidney	1,736	408	338	13	1.8	5.9	13.9	2.8
Other urologic	1,951	125	81	*	2.0	1.8	3.3	0.2
Other cause	11,063	755	374	32	11.4	11.0	15.4	6.8
Unknown/missing	5,232	310	581	339	5.4	4.5	24.0	72.1
All	97,143	6,875	2,424	470	100.0	100.0	100.0	100.0

4.a Incident counts, 2005, by age, gender, race, ethnicity, & primary diagnosis incident ESRD patients

	Rate per million, 2005				Annual percent change, 1997-2001				Annual percent change, 2001-2005			
	HD	PD	Tx	Unk.	HD	PD	Tx	Unk.	HD	PD	Tx	Unk.
0-19	7.2	4.6	2.2	0.1	3.3	-2.0	2.0	-4.0	0.4	0.3	-2.3	0.1
20-44	104.8	11.4	5.6	0.4	1.0	-7.1	4.4	-9.5	1.5	-2.6	-2.7	-2.0
45-64	545.7	43.1	15.1	1.9	2.3	-5.4	9.7	-9.4	-0.4	-4.9	5.5	15.1
65-74	1,332.7	73.2	11.8	3.2	3.2	-4.1	24.5	-10.2	-0.5	-4.0	18.4	12.9
75+	1,663.1	58.4	1.4	2.3	5.9	-0.7	*	-9.1	2.0	-2.5	*	5.6
Male	398.0	26.3	8.2	1.1	3.6	-4.7	6.2	-8.2	1.3	-3.1	2.9	6.1
Female	254.6	19.5	6.0	0.6	3.2	-4.8	8.9	-9.2	-0.4	-4.6	3.1	8.0
White	240.5	19.4	7.5	0.8	4.4	-4.9	7.7	-6.8	1.0	-3.8	2.3	7.0
African American	940.9	42.9	5.7	1.8	2.0	-5.0	3.4	-11.2	-0.1	-3.6	8.1	6.6
Native American	484.1	28.5	*	*	-0.2	-5.8	*	*	-2.7	-9.0	*	*
Asian	322.3	27.3	4.4	*	1.3	-3.4	10.0	*	-1.0	-3.6	4.4	*
Hispanic	463.6	23.0	3.2	0.5	2.6	-5.3	7.5	0.9	-0.5	-3.9	-2.2	-6.6
Non-Hispanic	305.7	22.5	7.6	0.9	3.7	-4.8	7.5	-8.4	0.7	-3.6	3.1	7.7
Diabetes	141.2	9.0	1.5	0.1	4.3	-5.7	4.1	-10.8	-0.2	-5.6	3.9	-8.3
Hypertension	88.4	5.0	0.7	0.1	3.4	-4.2	10.2	-13.2	0.4	-1.8	10.2	-5.7
Glomerulonephritis	21.9	3.2	1.3	0.1	-1.8	-7.0	6.8	-4.7	-3.2	-4.0	2.4	-11.8
Cystic kidney	5.7	1.4	1.1	0.0	0.4	-3.4	16.7	0.3	-0.1	1.1	5.6	-10.2
Other urologic	6.4	0.4	0.3	*	3.1	-1.9	-0.4	*	-7.2	-14.0	-7.9	*
Other cause	36.5	2.5	1.2	0.1	3.7	-1.9	8.0	-8.7	6.1	-2.0	4.7	4.5
Unknown/missing	8.3	0.5	0.5	0.2	6.5	-2.3	7.1	-3.4	6.1	0.0	-2.6	46.3
All	316.7	22.5	7.1	0.9	3.4	-4.9	7.3	-8.5	0.5	-3.8	2.9	6.8

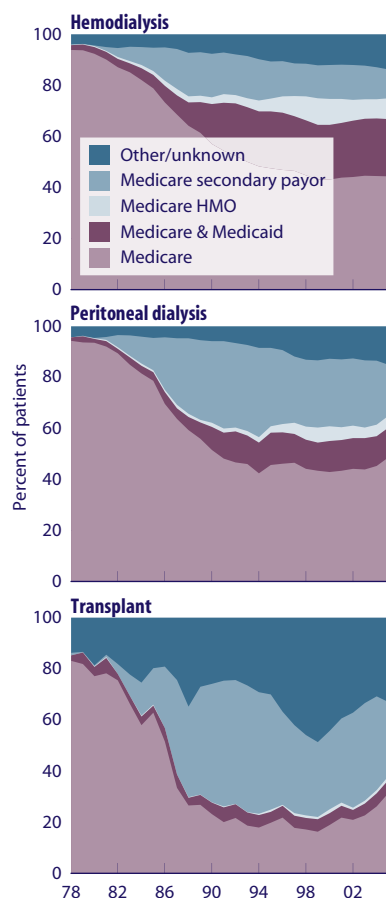
4.b Adjusted incident rates, 2005, & annual percent change, by age, gender, race, ethnicity, & primary diagnosis incident ESRD patients

n 2005, more than 97,000 new ESRD patients began therapy on hemodialysis, 6,875 were placed on peritoneal dialysis, and 2,424 received a preemptive transplant (Table 4.a). Patients age 45-64 make up 36 percent of the hemodialysis population, 42 percent of those on peritoneal dialysis, and more than half of those with a preemptive transplant. Primary diagnoses of diabetes and hypertension together account for 72.5 percent of patients starting on hemodialysis, but only one-fourth of those with a transplant.

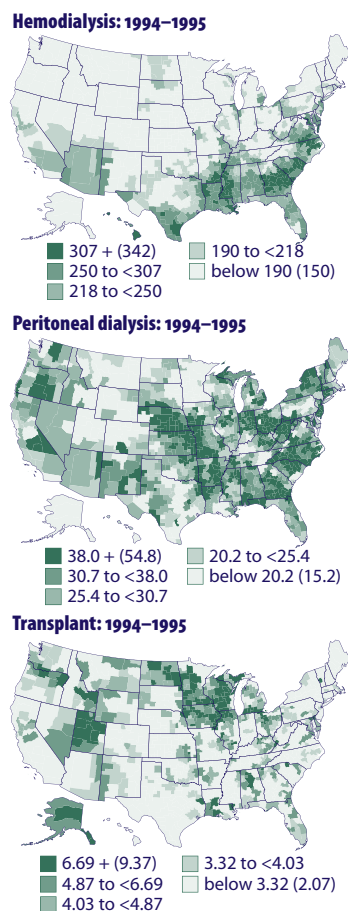
The incidence of ESRD per million population reached 317 in 2005 for hemodialysis, 22.5 for peritoneal dialysis, and 7.1 for transplant (Table 4.b). By race, the 2005 rate for patients starting therapy on hemodialysis was 241 among whites compared to 941 among African Americans; for peritoneal dialysis, 19.4 compared to 42.9. For those beginning with a transplant, in contrast, the rate among African Americans was lower, at 7.5 compared to 5.7. In the hemodialysis and transplant populations the annual rate of growth has slowed since 1997-2001.

Forty-four percent of new hemodialysis patients are covered by Medicare only, 22.5 percent are dually-enrolled (Medicare/Medicaid), and 8.1 percent are covered by a Medicare HMO provider—a slight increase from the 7.5 percent enrolled in 2004, which may in part be due to a more attractive payment rate structure available in the Medicare Advantage program (Figure 4.3). Medicare covers 48.5 and 31.5 percent, respectively, of peritoneal dialysis and transplant patients, while 11.8 and 5.1 percent are dually-enrolled and 4.6 and 1.5 percent have HMO coverage.

The use of initial modalities continues to vary across the country (Figure 4.4). The incident rate for patients starting therapy on hemodialysis, for example, is highest along the East Coast, in the southeastern states, and through the Gulf Coast. The pattern for preemptive transplants is reversed, with rates greatest in the Upper Midwest and in the northeastern states. In the hemodialysis population, the mean rate in the upper quintile is 2.4



4.3 Incident patient distribution, by first modality & payer incident ESRD patients



4.4 Geographic variations in unadjusted incident rates (per million population), by first modality & HSA incident ESRD patients

times greater than in the lower; regions with the highest transplant rates have a mean rate 3.9 times greater than those with the lowest.

More than thirteen hundred children initiated therapy in 2005. Of these, 17.7 received a preemptive transplant—up from 15.3 percent in 2004 (Table 4.c). Twenty-six percent of children were placed on CCPD, far more than the rate of 3 percent or less found in all other age categories.

table 4.a incident ESRD patients. **table 4.b** incident ESRD patients; rates by age adjusted for gender & race, rates by gender adjusted for age & race, rates by race & ethnicity adjusted for age & gender, & rates by primary diagnosis adjusted for age, gender, & race. For Hispanic patients we omit data prior to 1996, the first full year after the April 1995 introduction of the revised Medical Evidence form, which contains more specific questions on race & ethnicity. **figure 4.3** incident ESRD patients. **figure 4.4** incident ESRD patients, by HSA, unadjusted. Excludes patients residing in Puerto Rico & the Territories. **table 4.c** incident ESRD patients. * "Zero values in this cell. *Values for cells with ten or fewer patients are suppressed.

	Total	Transplant	Center hemo	Center self hemo	Home hemo	CAPD	CCPD	Other PD	Unk.
0-19	1,325	17.7	50.2	.	.	4.2	26.0	0.2	1.7
20-44	13,706	5.1	84.8	0.0	0.4	6.3	2.9	0.0	0.5
45-64	39,445	3.1	88.6	0.0	0.4	5.1	2.2	0.0	0.6
65-74	24,711	1.0	93.0	0.0	0.3	4.0	1.3	0.1	0.3
75+	27,723	0.1	95.5	0.1	0.5	2.7	0.9	0.1	0.2
Unknown	*	.	100.0	.	.	.	.	.	.
Male	59,353	2.3	90.5	0.0	0.4	4.3	2.0	0.0	0.4
Female	47,544	2.2	90.3	0.0	0.4	4.5	2.1	0.0	0.4
Unknown	15	6.7	40.0	.	.	.	.	.	53.3
White	69,747	2.7	89.6	0.0	0.4	4.8	2.3	0.1	0.2
African American	30,228	0.7	93.9	0.0	0.5	3.1	1.6	0.0	0.1
Native American	1,202	0.6	92.8	.	0.1	4.3	1.9	.	0.3
Asian	4,036	1.6	89.5	0.0	0.3	6.7	1.7	0.0	0.1
Other/unknown	1,699	17.6	64.3	.	0.6	2.4	2.8	.	12.3
Hispanic	13,709	0.9	93.2	0.0	0.3	3.2	2.3	0.1	0.1
Non-Hispanic	93,203	2.5	90.0	0.0	0.4	4.5	2.0	0.0	0.4
Diabetes	46,851	0.9	92.7	0.0	0.3	4.3	1.6	0.0	0.1
Hypertension	28,622	0.8	93.3	0.0	0.5	3.8	1.6	0.0	0.0
Glomerulonephritis	8,100	4.8	82.7	0.0	0.2	7.8	4.2	.	0.2
Cystic kidney	2,495	13.5	69.3	.	0.2	10.6	5.7	0.0	0.5
Other urologic	2,158	3.8	89.9	0.1	0.5	3.5	2.3	0.0	.
Other cause	12,224	3.1	90.1	0.0	0.4	3.1	3.0	0.0	0.2
Unknown cause	4,590	2.6	90.8	0.0	0.8	3.9	1.7	0.0	0.1
Missing cause	1,872	24.7	53.7	.	1.2	2.1	0.7	0.6	17.1
All	106,912	2.3	90.4	0.0	0.4	4.4	2.1	0.0	0.4

4.c Percent distribution of incident patients, by first modality & treatment location, 2005 (row percent) incident ESRD patients

More on modalities: p.a, p.2-3, & p.6; 8.13-14 (pediatric patients).

	Number of patients				Percent of total (column percent)			
	HD	PD	Tx	Unk.	HD	PD	Tx	Unk.
0-19	1,292	892	5,104	74	0.4	3.4	3.6	5.9
20-44	44,765	5,915	44,183	345	14.3	22.8	30.8	27.3
45-64	126,828	11,242	73,234	614	40.4	43.4	51.0	48.7
65-74	71,672	4,785	17,757	139	22.8	18.5	12.4	11.0
75+	69,605	3,061	3,415	90	22.2	11.8	2.4	7.1
Unknown	.	.	.	.	.	.	.	.
Male	171,245	13,426	85,122	731	54.5	51.9	59.2	57.9
Female	142,911	12,469	58,566	520	45.5	48.2	40.8	41.2
Unknown	*	.	*	11	*	.	*	0.9
White	171,385	16,861	106,917	639	54.6	65.1	74.4	50.6
African American	119,883	6,773	26,665	281	38.2	26.2	18.6	22.3
Native American	4,725	317	1,427	11	1.5	1.2	1.0	0.9
Asian	13,455	1,540	6,751	43	4.3	6.0	4.7	3
Other/unknown	4,714	404	1,933	288	1.5	1.6	1.4	22.8
Hispanic	47,076	3,289	17,287	129	15.0	12.7	12.0	10.2
Non-Hispanic	267,086	22,606	126,406	1,133	85.0	87.3	88.0	89.8
Diabetes	137,289	8,806	32,857	205	43.7	34.0	22.9	16.2
Hypertension	89,580	6,301	21,411	146	28.5	24.3	14.9	11.6
Glomerulonephritis	34,051	4,797	39,264	233	10.8	18.5	27.3	18.5
Cystic kidney	7,899	1,232	13,272	55	2.5	4.8	9.2	4.4
Other urologic	7,391	704	5,451	35	2.4	2.7	3.8	2.8
Other cause	25,723	3,000	20,377	151	8.2	11.6	14.2	12.0
Unknown/missing	12,229	1,055	11,061	437	3.9	4.1	7.7	34.6
All	314,162	25,895	143,693	1,262	100.0	100.0	100.0	100.0

4.d Prevalent counts, 2005, by age, gender, race, ethnicity, & primary diagnosis December 31 point prevalent ESRD patients

	Rate per million, 2005				Annual percent change, 1997-2001				Annual percent change, 2001-2005			
	HD	PD	Tx	Unk.	HD	PD	Tx	Unk.	HD	PD	Tx	Unk.
0-19	14	10	58	0.7	1.9	-1.3	2.2	2.9	0.4	0.3	2.3	-9.9
20-44	401	53	401	2.7	2.9	-4.6	1.9	-0.1	1.5	-1.4	0.9	-7.5
45-64	1,964	163	1,016	6.8	3.7	-5.6	5.5	-3.2	1.1	-2.1	4.0	4.1
65-74	4,254	266	975	6.0	4.2	-3.9	13.7	-8.6	1.4	-0.6	11.1	8.3
75+	4,440	175	177	3.7	6.7	-3.0	23.3	-1.3	3.1	2.4	20.5	-6.5
Male	1,237	94	570	4.1	4.9	-4.8	4.5	-1.9	2.1	-0.6	3.8	0.5
Female	841	77	371	2.5	3.9	-4.4	4.9	-2.8	1.2	-1.6	3.8	-4.1
White	657	66	425	2.6	5.4	-4.4	4.7	-3.1	2.3	-1.0	3.6	-1.7
African American	3,879	198	777	8.1	3.5	-5.5	4.8	-1.0	1.2	-1.3	4.7	-1.2
Native American	2,015	122	528	.	2.4	-7.5	3.2	.	-0.9	-5.2	1.9	.
Asian	1,151	119	485	2.9	3.4	-3.2	5.2	-3.2	0.4	-0.8	4.8	-1.0
Hispanic	1,654	94	493	3.5	5.5	-2.4	6.1	-1.3	1.3	-3.2	4.9	-2.2
Non-Hispanic	969	83	468	3.2	4.6	-4.6	4.6	-2.4	1.9	-0.7	3.8	-1.6
Diabetes	441	28	108	0.7	6.4	-4.3	5.7	-2.6	2.5	-2.0	4.4	-0.4
Hypertension	292	21	70	0.5	3.3	-5.2	3.7	-1.9	1.5	0.8	3.8	-7.3
Glomerulonephritis	110	15	128	0.8	1.6	-6.1	3.8	-2.4	-1.0	-2.5	2.9	-7.1
Cystic kidney	26	4	43	0.2	1.7	-5.1	5.1	-5.9	-0.6	-0.8	4.3	2.6
Other urologic	24	2	18	0.1	4.7	-1.5	5.2	-2.4	-1.4	-2.9	4.3	-4.4
Other cause	84	10	67	0.5	3.7	-2.7	4.8	-1.1	2.9	-0.1	4.1	-0.6
Unknown/Missing	19	2	16	0.3	4.6	-3.4	5.9	-4.1	3.3	0.2	4.2	15.7
All	1,016	84	466	3.2	4.4	-4.6	4.7	-2.5	1.7	-1.1	3.8	-1.7

4.e Adjusted prevalent rates, 2005, & annual percent change, by age, gender, race, ethnicity, & primary diagnosis December 31 point prevalent ESRD patients

At the end of 2005, more than 314,000 ESRD patients were receiving hemodialysis therapy, 25,895 were being treated with peritoneal dialysis, and 143,693 had a functioning graft (Table 4.d). By age, patients 45-64 constitute the largest part of the prevalent population, from 40.4 percent of those on hemodialysis to 51 percent of those with a transplant.

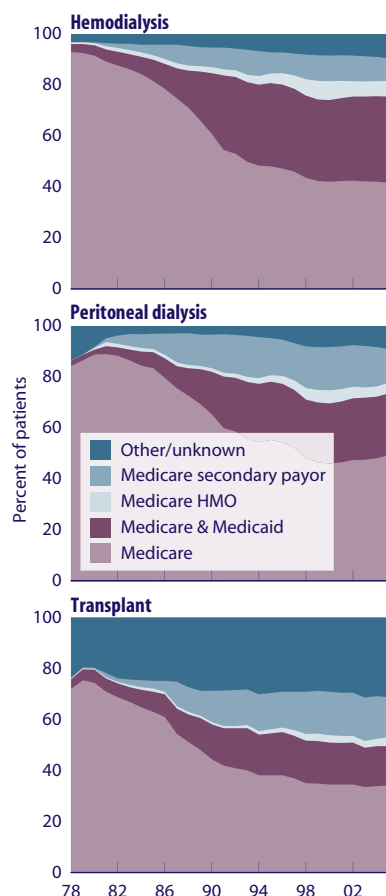
Racial disparities, as in past years, continue to be dramatic. Fifty-five percent of hemodialysis patients are white, and 38 percent African American. In the transplant population, in contrast, whites account for three in four patients, and African Americans fewer than one in five.

In 2005, the prevalence of ESRD reached 1,016 per million population for hemodialysis, 84 for peritoneal dialysis, and 466 for transplant (Table 4.e). The rate for African Americans reached 3,879, six times that found among whites, and nearly twice as high as the rate in the Native American population. Since 1997-2001, the annual percent change in ESRD prevalence has dropped in the hemodialysis and transplant populations, from 4.4 to 1.7, and from 4.7 to 3.8, respectively.

Slightly more than 90 percent of prevalent hemodialysis patients had some type of Medicare coverage in 2005; close to 42 percent were covered solely by Medicare, while 33.7 percent were under Medicare/Medicaid—a population that continues to grow slowly (Figure 4.5). Among transplant patients, in contrast, 69 percent have some form of Medicare insurance, but only 34 percent are covered by Medicare alone.

Rates by modality in the prevalent population show the same geographical patterns as those for new ESRD patients (Figure 4.6). For hemodialysis, rates are highest in the south and southeastern parts of the country, while in the transplant population rates remain highest in the northern states.

Nearly 70 percent of prevalent pediatric patients had a functioning graft in 2005, while in-center hemodialysis was

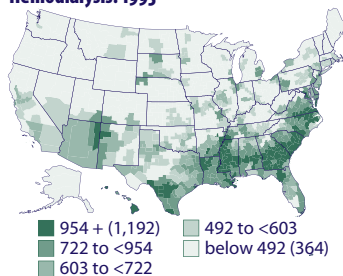


4.5 Prevalent pt distribution, by modality & payer Dec. 31 point prevalent ESRD patients

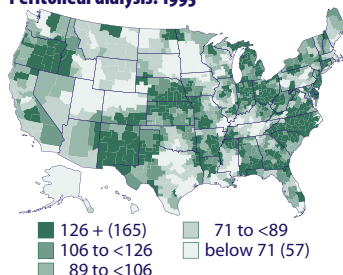
provided to 17.3 percent, and 11 percent received therapy through CCPD (Table 4.f). Only 4.5 percent of patients age 75 and older had a functioning graft; 91 percent, in contrast, were on hemodialysis. Slightly more males than females had a functioning graft in 2005, at 31.5 versus 27.3 percent, and transplants were twice as likely in whites compared to African Americans.

table 4.d December 31 point prevalent ESRD patients. **table 4.e** December 31 point prevalent ESRD patients; rates by age adjusted for gender & race, rates by gender adjusted for age & race, rates by race & ethnicity adjusted for age & gender, & rates by primary diagnosis adjusted for age, gender, & race. For Hispanic patients we omit data prior to 1996, the first full year after the April 1995 introduction of the revised Medical Evidence form, which contains more specific questions on race & ethnicity. **figure 4.5** December 31 point prevalent ESRD patients. **figure 4.6** December 31 point prevalent ESRD patients, by HSA, unadjusted. Excludes patients residing in Puerto Rico & the Territories. **table 4.f** December 31 point prevalent ESRD patients. *Zero values in this cell. *Values for cells with ten or fewer patients are suppressed.

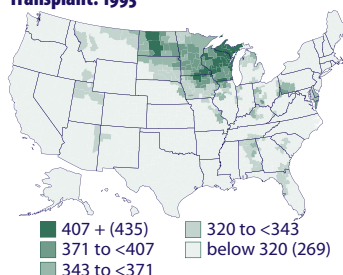
Hemodialysis: 1995



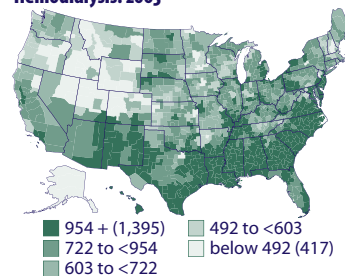
Peritoneal dialysis: 1995



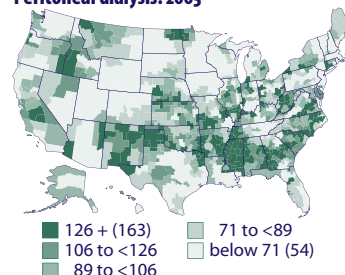
Transplant: 1995



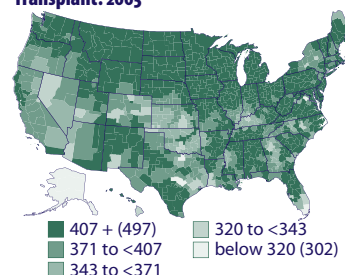
Hemodialysis: 2005



Peritoneal dialysis: 2005



Transplant: 2005

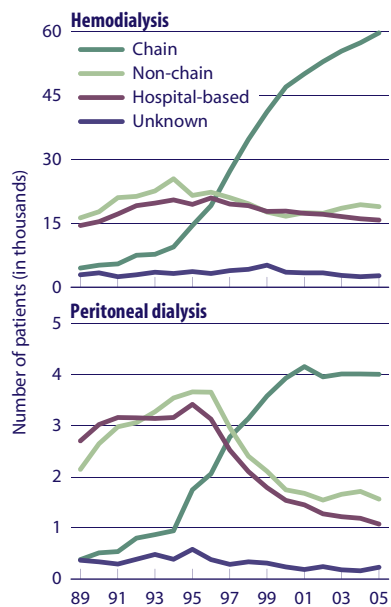


4.6 Geographic variations in unadjusted prevalent rates (per million population), by modality & HSA December 31 point prevalent ESRD patients

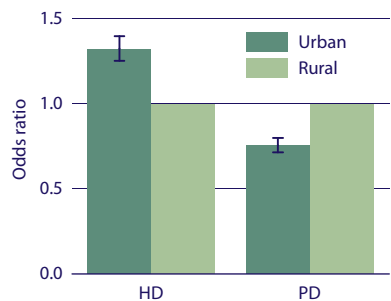
	Total	Transplant	Center hemo	Center self hemo	Home hemo	CAPD	CCPD	Other PD	Unk.
0-19	7,362	69.3	17.3	.	0.3	1.1	11.0	0.0	1.0
20-44	95,208	46.4	46.6	0.0	0.4	2.6	3.6	0.0	0.4
45-64	211,918	34.6	59.4	0.0	0.4	2.4	2.9	0.0	0.3
65-74	94,353	18.8	75.5	0.0	0.4	2.0	3.0	0.0	0.1
75+	76,171	4.5	90.9	0.0	0.5	1.6	2.4	0.0	0.1
Unknown	.	.	.	.	.	.	.	.	.
Male	270,524	31.5	62.8	0.0	0.5	2.0	3.0	0.0	0.3
Female	214,466	27.3	66.2	0.0	0.4	2.5	3.3	0.0	0.2
Unknown	22	22.7	22.7	.	4.5	.	.	.	50.0
White	295,802	36.1	57.4	0.0	0.5	2.3	3.4	0.0	0.2
African American	153,602	17.4	77.6	0.0	0.4	1.8	2.6	0.0	0.2
Native American	6,480	22.0	72.8	0.0	0.1	2.4	2.5	0.0	0.2
Asian	21,789	31.0	61.4	0.0	0.3	3.5	3.6	0.0	0.2
Other/unknown	7,339	26.3	64.0	0.0	0.2	2.0	3.5	0.1	3.8
Hispanic	67,781	25.5	69.2	0.0	0.2	1.8	3.0	0.0	0.2
Non-Hispanic	417,231	30.3	63.5	0.0	0.5	2.3	3.1	0.0	0.3
Diabetes	179,157	18.3	76.2	0.0	0.4	2.2	2.7	0.0	0.1
Hypertension	117,438	18.2	75.8	0.0	0.4	2.3	3.1	0.0	0.1
Glomerulonephritis	78,345	50.1	42.9	0.0	0.5	2.4	3.7	0.0	0.3
Cystic kidney	22,458	59.1	34.6	0.0	0.5	2.3	3.2	0.0	0.2
Other urologic	13,581	40.1	53.8	0.0	0.6	1.9	3.3	0.0	0.2
Other cause	49,251	41.4	51.8	0.0	0.4	2.1	4.0	0.0	0.3
Unknown cause	18,827	35.0	59.1	0.0	0.5	2.1	3.0	0.0	0.2
Missing cause	5,955	75.0	16.4	.	0.5	0.7	0.7	0.1	6.7
All	485,012	29.6	64.3	0.0	0.4	2.2	3.1	0.0	0.3

4.f Percent distribution of prevalent patients, by modality & treatment location, 2005 (row percent) December 31 point prevalent ESRD patients

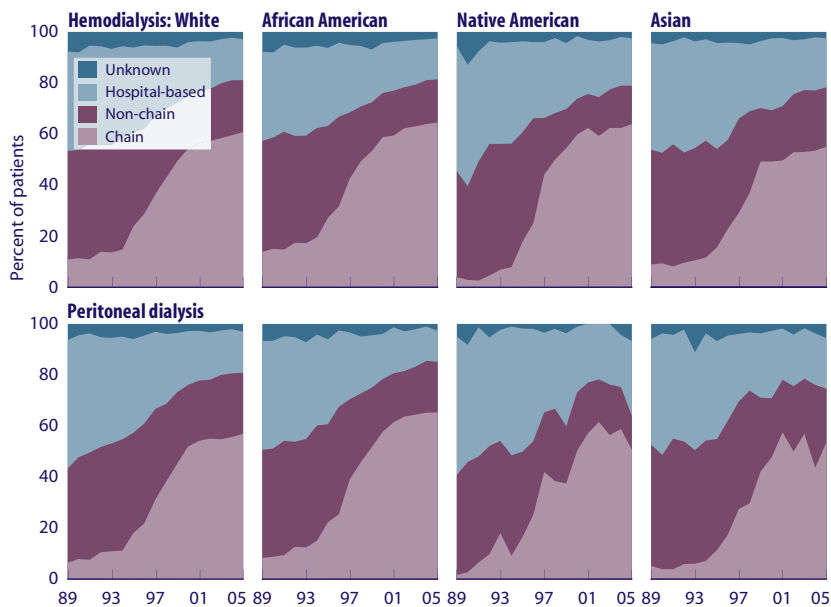
More on modalities: p.a, p.2-3, & p.7; 8.13-14 (pediatric patients).



4.7 Incident patient counts, by first modality & unit type incident dialysis pts



4.9 Odds of incident patients using HD or PD, by location incident dialysis pts, 2003–2005



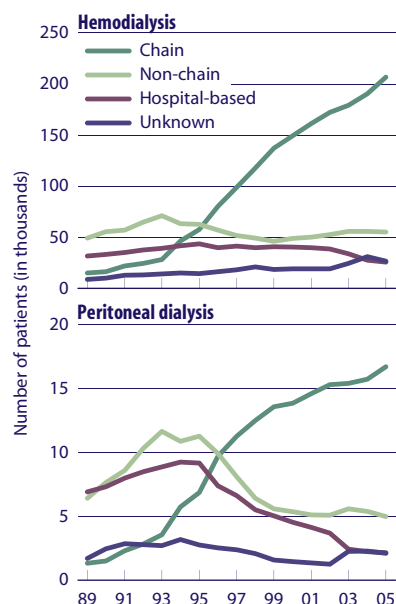
4.8 Incident patient distribution, by first modality, race, & unit type incident dialysis patients

With further consolidation of the largest dialysis providers during the past two years, and divestiture of numerous units to satisfy requirements of the Federal Trade Commission, the provider landscape continues to change. A visual illustration of how the providers existing in 1995 have merged and changed over the last decade is provided in Figure 10.1, on page 209.

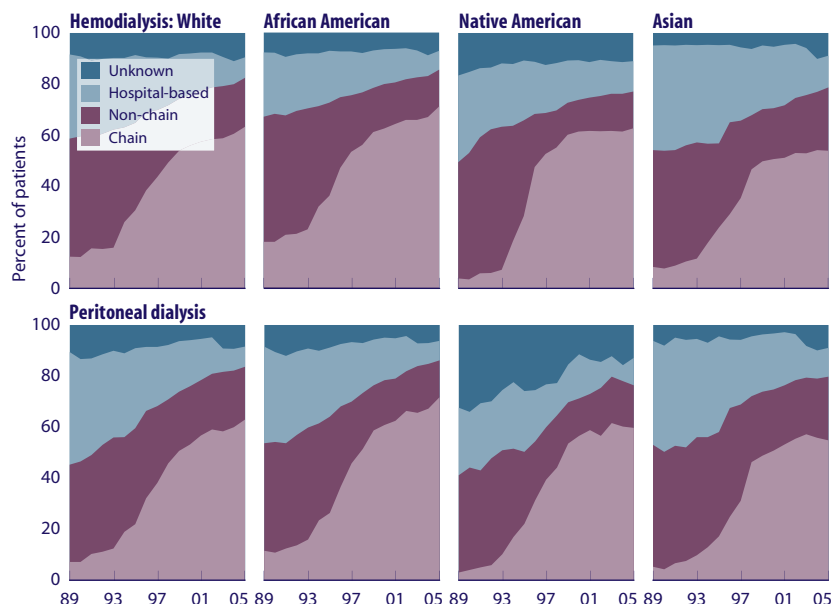
Data on the distribution of dialysis patients shows the continued increase in market share of the chain-owned providers (Figure 4.7). These providers treated nearly 60,000 incident hemodialysis patients in 2005—61.5 percent of new patients treated with this modality, and up from 55.3 percent in 2000. This rise has been concurrent with a drop in the percentage of new hemodialysis patients treated in hospital-based units, from 21.0 percent in 2000 to 16.2 percent in 2005.

The non-chain environment, in contrast, has remained relatively steady, accounting for 19.5–19.6 percent of incident hemodialysis patients in both 2000 and 2005.

Similar changes have occurred for the incident peritoneal dialysis population. In 2005, 58.3 percent were treated in chain-owned units, 22.7 percent in non-chain units, and 15.7 percent in hospital-based units—compared to 52.8, 23.4, and 20.6 percent in 2000. As noted in the 2006 ADR, Gambro and Renal Care Group have been the providers most likely to place their patients on peritoneal dialysis. With the recent acquisition of Gambro by DaVita, and of RCG by Fresenius, the future use of this therapy is in question.



4.10 Prevalent pt counts, by modality & unit type December 31 point prevalent dialysis pts



4.11 Prevalent patient distribution, by modality, race, & unit type December 31 point prevalent dialysis patients

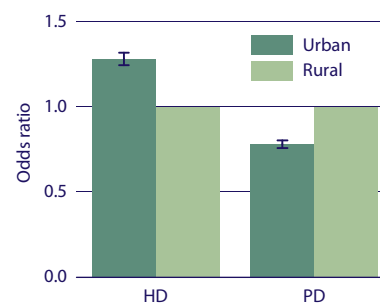
Incident patient distribution by provider type continues to differ slightly by race (Figure 4.8). In the African American and Native American populations, for example, 64–65 percent of new hemodialysis patients are treated in chain-owned units, compared to 60.7 percent of white patients and 54.9 percent of Asians.

As compared to their counterparts living in rural areas, new ESRD patients living in urban settings are 32 percent more likely to be placed on hemodialysis, and 24 percent less likely to start therapy on peritoneal dialysis (Figure 4.9).

Changes in providers are visible in the prevalent population as well. The percentage of prevalent hemodialysis patients treated in chain-owned units has grown from 58.1 in 2000 to 65.8 in 2005 (Figure 4.10). Hospital-based units, in contrast, now treat just 8.2 percent of both the hemodialysis and peritoneal dialysis populations, down from 15.6 and 18.0 percent, respectively.

In the prevalent African American population, 71–72 percent of both hemodialysis and peritoneal dialysis patients receive therapy through chain-owned providers, compared to 54–55 percent of Asian patients, 63 percent of whites, and 60–63 percent of Native Americans (Figure 4.11).

A prevalent patient living in an urban area is 28 percent more likely than a rural patient to be treated with hemodialysis, and 22 percent less likely to receive peritoneal dialysis therapy (Figure 4.12).



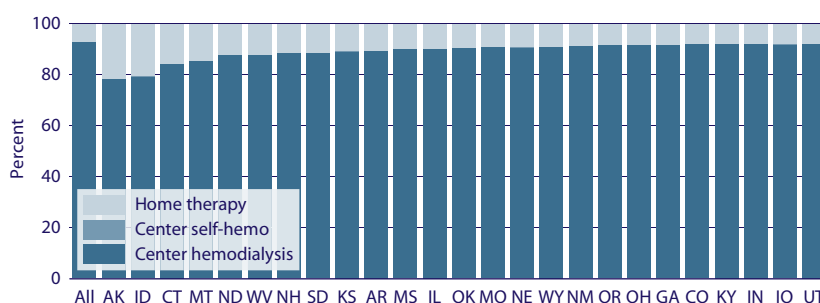
4.12 Odds of prevalent patients using HD or PD, by location Dec. 31 point prev. dialysis pts

figures 4.7–8 incident dialysis patients. **figure 4.9** incident dialysis patients, 2003–2005. Excludes patients with unknown geographic location. Odds ratios controlled by age, gender, & race. **figures 4.10–11** December 31 point prevalent dialysis patients. **figure 4.12** December 31 point prevalent dialysis patients, 2003–2005. Excludes patients with unknown geographic location. Odds ratios controlled by age, gender, & race.

	Total patients	Center hemo	Center self hemo	Home hemo	CAPD	CCPD
Total patients	104,018	96,684	31	428	4,673	2,202
0-19	1,066	0.7	.	.	1.2	15.7
20-44	12,932	12.0	6.5	12.4	18.4	18.2
45-64	37,988	36.2	29.0	34.1	43.1	39.2
65-74	24,392	23.8	19.4	18.2	21.3	15.0
75+	27,638	27.4	45.2	35.3	15.9	11.9
Unknown	*	0.0	.	.	.	.
Male	57,714	55.6	64.5	56.5	54.3	53.7
Female	46,298	44.4	35.5	43.5	45.7	46.3
Unknown	*	0.0	.	.	.	.
White	67,698	64.6	71.0	62.1	72.0	71.5
African American	29,973	29.4	22.6	32.7	20.2	22.1
Native American	1,191	1.2	.	0.2	1.1	1.0
Asian	3,965	3.7	6.5	2.6	5.8	3.2
Other/unknown	1,191	1.1	.	2.3	0.9	2.2
Hispanic	13,567	13.2	6.5	8.2	9.4	14.3
Non-Hispanic	90,451	86.8	93.5	91.8	90.6	85.7
Diabetes	46,365	44.9	45.2	36.0	43.3	34.2
Hypertension	28,381	27.6	32.3	31.5	23.0	20.4
Glomerulonephritis	7,692	6.9	3.2	4.2	13.6	15.6
Cystic kidney	2,144	1.8	.	1.4	5.7	6.5
Other urologic	2,076	2.0	6.5	2.3	1.6	2.3
Other cause	11,818	11.4	6.5	11.2	8.2	16.8
Unknown cause	4,463	4.3	6.5	8.2	3.8	3.6

4.8

Percent distribution of incident dialysis patients, by modality & treatment location, 2005 (column percent) incident dialysis patients



4.13

Percent distribution of incident dialysis patients in the top 25 states for home therapy, by dialysis type & state, 2004–2005 combined incident dialysis patients

In this spread we focus on the use of home hemodialysis, a therapy receiving increased attention in recent years.

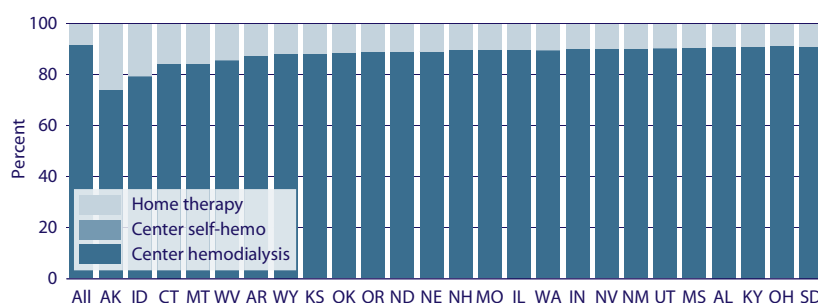
In 2005, 428 incident dialysis patients began therapy on home hemodialysis (Table 4.g). For the younger age groups, their distribution is similar to that of the in-center hemodialysis population, with 12.4 percent age 20–44, and 34.1 percent age 45–64. Patients age 75 and older account for a higher percentage of the home hemodialysis population, at 35.3 compared to 27.4 percent. Distribution by gender is almost the same, while, by race and ethnicity, Hispanic patients account for a lower proportion of those on home hemodialysis, at 8.2 percent to 13.2 percent.

Overall, 7.2 percent of incident dialysis patients began treatment on home therapy in 2004–2005 (Figure 4.13). The therapy is popular in several states with widely dispersed populations, including Alaska and Idaho, each with more than 20 percent of their new dialysis patients treated with this therapy. It is also used frequently, however, in Connecticut and West Virginia, at 16.0 and 12.4 percent, respectively.

	Total patients	Center hemo	Center self hemo	Home hemo	CAPD	CCPD
Total	340,057	311,919	138	2,105	10,732	15,163
0-19	2,184	0.4	.	1.0	0.8	5.3
20-44	50,680	14.2	21.7	19.3	22.8	22.8
45-64	138,070	40.3	55.1	44.0	47.2	40.8
65-74	76,457	22.8	13.0	18.4	17.8	18.9
75+	72,666	22.2	10.1	17.3	11.4	12.1
Male	184,671	54.5	61.6	57.9	50.5	52.8
Female	155,380	45.5	38.4	42.1	49.5	47.2
Unknown	*	0.0	.	0.0	.	.
White	188,246	54.5	47.8	66.2	64.2	65.7
African American	126,656	38.2	44.9	29.6	25.9	26.3
Native American	5,042	1.5	1.4	0.4	1.4	1.1
Asian	14,995	4.3	5.1	3.0	7.1	5.2
Other/unknown	5,118	1.5	0.7	0.8	1.4	1.7
Hispanic	50,365	15.0	8.7	6.2	11.5	13.5
Non-Hispanic	289,692	85.0	91.3	93.8	88.5	86.5
Diabetes	146,095	43.8	29.0	32.0	36.4	32.3
Hypertension	95,881	28.5	31.9	23.7	25.2	23.7
Glomerulonephritis	38,848	10.8	17.4	18.7	17.4	19.3
Cystic kidney	9,131	2.5	6.5	5.5	4.9	4.7
Other urologic	8,095	2.3	2.9	3.9	2.4	3.0
Other cause	28,723	8.2	10.1	10.2	9.7	12.9
Unknown cause	12,198	3.6	2.2	4.5	3.8	3.8
Missing cause	1,086	0.3	.	1.5	0.4	0.3

4.h

Percent distribution of prevalent dialysis patients, by modality & treatment location, 2005 (column percent) December 31 point prevalent dialysis patients



4.14

Percent distribution of point prevalent dialysis patients in the top 25 states for home therapy, by dialysis type & state, 2005 December 31 point prevalent dialysis patients

In the prevalent dialysis population, 2,105 patients were treated with home hemodialysis during 2005 (Table 4.h). Close to one in five were age 20–44, compared to 14.2 percent in the center hemodialysis population. Fewer, however, were age 75 or older, at 17.3 compared to 22.2 percent. Prevalent home hemodialysis patients are less likely to be African American or Hispanic, at 29.6 and 6.2 percent of the population, compared to 38.2 and 15.0 percent for in-center hemodialysis patients.

By state, use of home hemodialysis therapy among prevalent patients is similar to that of the incident population (Figure 4.14). One in four prevalent dialysis patients in Alaska is treated with this therapy, one in five living in Idaho, and 15–16 percent of those living in Connecticut, Montana, and West Virginia. ❧

all figures & tables exclude patients on other forms of peritoneal dialysis, those whose type of dialysis is unknown, &, in the figures, those residing in Puerto Rico & the Territories. Home therapy: home hemodialysis, CAPD, & CCPD combined. ❧ **table 4.g** incident dialysis patients, 2005. **figure 4.13** incident dialysis patients, 2004–2005. **table 4.h & figure 4.14** December 31 point prevalent dialysis patients, 2005.

incident modality

table 4.a In 2005, more than 97,000 new ESRD patients began therapy on hemodialysis, 6,875 were placed on peritoneal dialysis, and 2,424 received a preemptive transplant. **table 4.b** The incidence of ESRD per million population reached 317 in 2005 for hemodialysis, 22.5 for peritoneal dialysis, and 7.1 for transplant. **figure 4.3** Forty-four percent of new hemodialysis patients are covered by Medicare, 22.5 percent are dually-enrolled (Medicare/Medicaid), and 8.1 percent are covered by a Medicare HMO provider.

prevalent modality

table 4.d At the end of 2005, more than 314,000 ESRD patients were being treated with hemodialysis, 25,895 were on peritoneal dialysis, and 143,693 had a functioning graft. **table 4.e** In 2005, the prevalence of ESRD reached 1,016 per million population for hemodialysis, 84 for peritoneal dialysis, and 466 for transplant. The rate for African Americans reached 3,879, six times that found among whites, and nearly twice as high as the rate in the Native American population. **figure 4.5** Slightly more than 90 percent of prevalent hemodialysis patients had some type of Medicare coverage in 2005; close to 42 percent were covered solely by Medicare, and 33.7 percent were dually-enrolled in both Medicare and Medicaid.

modality & provider characteristics

figure 4.7 Chain-owned providers treated nearly 60,000 incident hemodialysis patients in 2005—61.5 percent of new patients treated with this modality, and up from 55.3 percent in 2000. This rise has been concurrent with a drop in the percentage of new hemodialysis patients treated in hospital-based units, from 21.0 percent in 2000 to 16.2 percent in 2005. **figure 4.11** In the prevalent African American population, 71–72 percent of both hemodialysis and peritoneal dialysis patients receive therapy through chain-owned providers, compared to 54–55 percent of Asian patients, 63 percent of whites, and 60–63 percent of Native Americans.

home hemodialysis

table 4.h In the prevalent dialysis population, 2,105 patients were treated with home hemodialysis during 2005. Close to one in five were age 20–44, compared to 14.2 percent in the center hemodialysis population. Fewer, however, were age 75 or older, at 17.3 compared to 22.2 percent. Home hemodialysis patients are less likely to be African American or Hispanic, at 29.6 and 6.2 percent of the population, respectively, compared to 38.2 and 15.0 percent for in-center hemodialysis patients.

maps

National means & patient populations for maps can be found in the Excel file for this chapter—on our website at www.usrds.org, & also on the CD-ROM included at the back of this book.