



Split Rock State Park, Minnesota

INCIDENCE, PREVALENCE, PATIENT CHARACTERISTICS, & MODALITY

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Here and there awareness is growing that man, far from being the overlord of all creation, is himself part of nature, subject to the same cosmic forces that control all other life. Man's future welfare and probably even his survival depend upon his learning to live in harmony, rather than in combat, with these forces.

RACHEL CARSON,
"Essay on the Biological Sciences"

In 2010, the number of new patients starting therapy on hemodialysis declined for the first time in more than three decades. The population initiating on peritoneal dialysis, in contrast, grew for the second year in a row, and now accounts for 6.6 percent of patients with a known dialysis modality. This change may foreshadow those to come under the new bundled payment system, with its clear incentives for this form of home dialysis. Total incident dialysis cases rose 0.27 percent in 2010, to 114,083, while 2,863 patients received a preemptive transplant as their first ESRD modality; a total of 116,946 patients began ESRD therapy in 2010.

The rate of new ESRD cases per million population, which has been relatively stable since 2000, fell 2.0 percent in 2010, to 348. Growth continues to be driven by a relatively linear increase in the number of patients age 45–64; growth in the population age 65 and older, in contrast, has slowed considerably, but a slight upturn is present among those age 65–74, which could reflect the emergence of the post-World War II baby boomers into retirement age.

The incidence of ESRD in the black/African American population has finally started to decline, overall and for ESRD due to diabetes. Among those age 20–39, however, differences between whites and blacks/African Americans continue to be dramatic, with rates among the latter up to 3.8 times greater. Rates are also considerably higher for blacks/African Americans age 60 and older than for their white counterparts, though the gap is beginning to narrow.

The December 31, 2010 prevalent population included 383,992 patients on hemodialysis and 29,733 on peritoneal dialysis, as well as 179,361 with a functioning kidney transplant; the total treated ESRD population thus rose to 593,086 — growth of 4 percent from 2009, which is the smallest increase in 30 years. The rate of prevalent ESRD cases reached 1,752 per million population, an increase of 1.1 percent from 2009, and also the slowest growth in the last three decades.

Insurance coverage in the dialysis population continues to change, with more incident dialysis patients now covered by Medicare Advantage. Private insurance, in contrast, is dominant among patients who receive a preemptive kidney transplant. In the 2010 prevalent population, 84 percent of hemodialysis patients and 79 percent of those on peritoneal dialysis had some type of Medicare coverage, compared to just 65 percent of those with a transplant.

Nephrology care prior to ESRD continues to be a concern. Since the 2005 introduction of the new Medical Evidence form (2728), with fields addressing pre-ESRD care, there has been little progress made in this area (pre-ESRD data, however, should be interpreted with caution because of the potential for misreporting). Forty-three percent of new ESRD patients in 2010, for example, had not seen a nephrologist prior to beginning therapy. And among these patients, 88 percent of those on hemodialysis began therapy with a catheter, compared to 54 percent of those who had received a year or more of nephrology care. Among those with a year or more of pre-ESRD nephrologist care, in contrast, 26 percent began therapy with a fistula — eight times higher than the rate among non-referred patients.

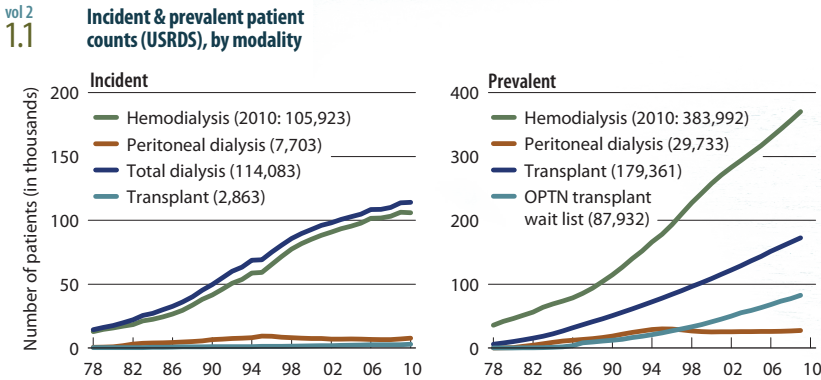
Data on patient care at the start of ESRD therapy show that the percentage of patients receiving an erythropoiesis stimulating agent (ESA) prior to initiation continues to decline, reaching just 20 percent in 2010 compared to one-third

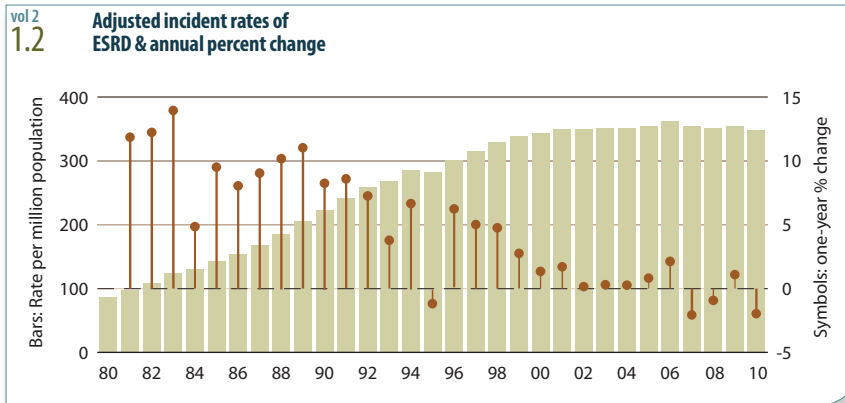
in the early part of the decade. This may reflect concern over potential adverse events when hemoglobin levels are targeted to a level above 12 g/dl. The mean hemoglobin at initiation of ESRD treatment is now 9.73 g/dl. These changes place different demands on care after the initiation of dialysis, and may alter the likelihood of a patient receiving a blood transfusion. The balance between cardiovascular risk with a hemoglobin greater than 12 g/dl and the risk of transfusion with lower hemoglobin levels needs to be addressed by patients and their physicians, particularly in the case of patients contemplating a kidney transplant, for whom sensitization from blood transfusions is to be avoided if at all possible.

The percentage of dialysis patients beginning therapy with an estimated glomerular filtration rate (eGFR, calculated with the CKD-EPI formula) above 15 ml/min/1.73 m² continues to rise. It is not clear if this progressive increase is the result of severe comorbidity or a simple numerical starting point based on the ability to calculate the eGFR. Hopefully, symptoms and complications of uremia are still the primary indications for starting renal replacement therapy rather than a simple number, one which has been brought into question in recent years in controlled trials of early versus later dialysis initiation.

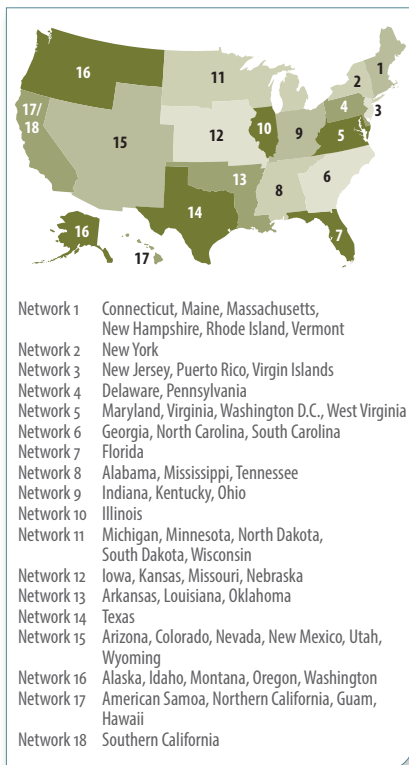
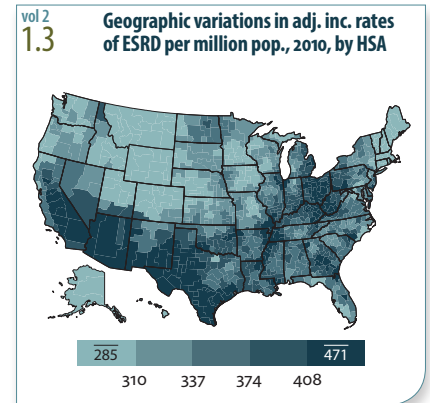
Biochemical data, collected on the Medical Evidence form since 2005, show that 57 percent of new patients in 2010 had an albumin less than the lower limit of normal, and 55 percent had a hemoglobin lower than 10 g/dl. Total cholesterol was greater than 200 mg/dl in 16 percent of patients, while 28 percent had an LDL level greater than 100 mg/dl, and 58 percent had an HDL level less than 40 mg/dl. Among patients with diabetes, 28 percent had a hemoglobin A1c level greater than 7 percent.

Recent changes and new incentives in the bundled prospective payment system for dialysis patients, introduced in January, 2011, may alter several characteristics of the incident and prevalent populations — particularly, due to cost incentives, the mix of peritoneal dialysis and hemodialysis patients. It is unclear how the expansion of peritoneal dialysis will affect patient outcomes, and how the new incentives will impact the emerging daily home hemodialysis population; provider incentives for this therapy are less clear, particularly as related to training. A more detailed assessment of the bundled payments is presented in Chapter Ten, and in future ADRS the USRDS will continue to assess the impact of this payment system on the ESRD population. » **Figure 1.1;** see page 429 for analytical methods. *Incident & December 31 point prevalent ESRD patients.*





In 2010, the adjusted incident rate of ESRD was 348 per million population, averaging 471 in the upper quintile. The highest adjusted rates occur in the Ohio Valley, portions of Texas and California, and the southwestern states. (Rates are not adjusted for ethnicity.) » **Figure 1.3**; see page 429 for analytical methods. *Incident ESRD patients. Adj: age/gender/race; ref: 2005 ESRD patients.*



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1.a **Patient demographics & adjusted rates, by ESRD network: incident dialysis patients, 2010**

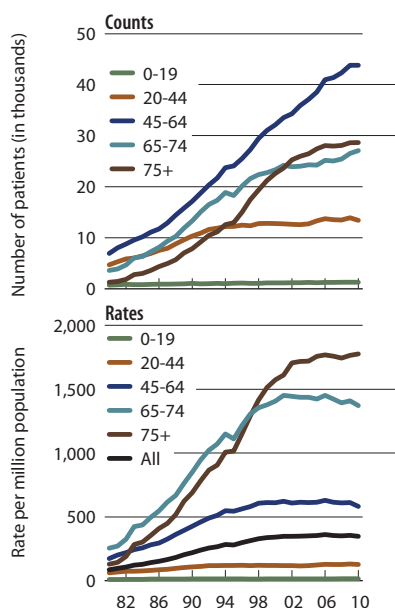
	All pts	% of total	Rate per million	Mean age	% DM	% White	% Af Am	% N Am	% Asian	% Hisp.
1	3,624	3.2	233.7	65.6	40.6	82.9	14.2	0.3	2.4	8.0
2	6,915	6.1	329.4	64.4	41.3	61.0	31.3	0.4	5.6	13.7
3	4,803	4.2	353.5	64.1	51.2	69.5	26.3	0.1	3.6	37.6
4	5,161	4.5	364.0	65.1	41.6	73.3	24.9	0.1	1.5	3.4
5	6,471	5.7	371.3	62.7	40.2	49.1	46.4	0.1	2.9	2.5
6	9,450	8.3	365.9	61.0	42.0	43.1	54.8	0.6	1.3	2.0
7	7,576	6.6	379.8	64.7	41.4	67.3	30.2	0.1	1.9	15.4
8	6,111	5.4	410.8	60.6	41.8	49.7	49.6	0.3	0.4	0.6
9	9,058	7.9	382.3	64.2	44.8	76.5	22.5	0.0	0.8	1.6
10	4,890	4.3	356.9	63.6	38.8	64.3	31.7	0.0	3.4	11.1
11	7,393	6.5	305.7	64.0	40.9	72.2	22.8	2.4	2.4	3.4
12	4,242	3.7	292.9	63.1	40.7	75.8	20.9	0.9	1.5	3.2
13	4,767	4.2	408.5	60.9	45.5	55.3	38.8	4.6	1.2	2.5
14	9,694	8.5	365.0	60.2	53.8	72.7	24.5	0.4	2.3	40.8
15	5,518	4.8	260.2	61.7	49.3	77.1	8.7	9.2	4.3	25.6
16	3,426	3.0	229.7	63.2	43.4	82.5	6.3	3.6	7.5	7.2
17	5,645	5.0	333.2	62.0	51.8	57.2	12.6	1.0	28.3	21.6
18	9,328	8.2	372.7	62.7	50.9	73.3	13.3	0.3	12.7	40.7
Unk	11	0.0	.	41.6	9.1	0.0	9.1	0.0	18.2	0.0
All	114,083	100.0	339.9	62.8	44.8	65.9	27.9	1.2	4.6	14.5

With an overall rate for incident dialysis patients of 340 per million population in 2010, rates by network range from 230 in Network 16 to 411 in Network 8. The distribution of patients by race continues to vary widely across the country. Blacks/African Americans, for example, constitute just 6.3 percent of the new dialysis population in Network 16, but 50–55 percent of patients in Networks 6 and 8. » **Table 1.a**; see page 429 for analytical methods. *Incident dialysis patients. Adj: age/gender/race; ref: 2005 patients. “.*” Zero values in this cell.

incident counts & adjusted rates

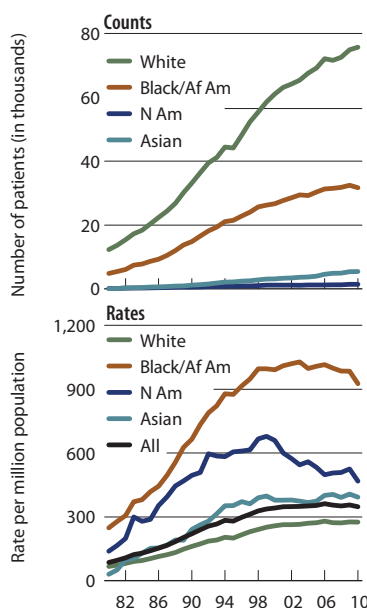
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Incident counts & adjusted rates of ESRD, by age



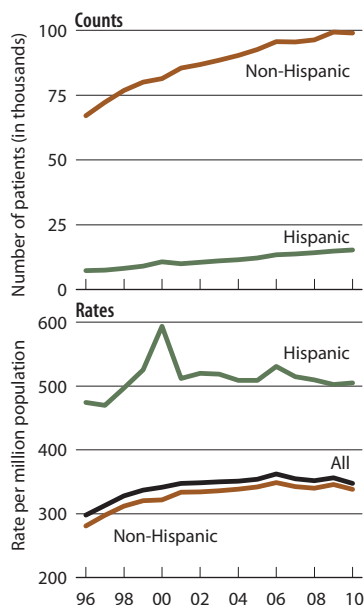
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Incident counts & adjusted rates of ESRD, by race



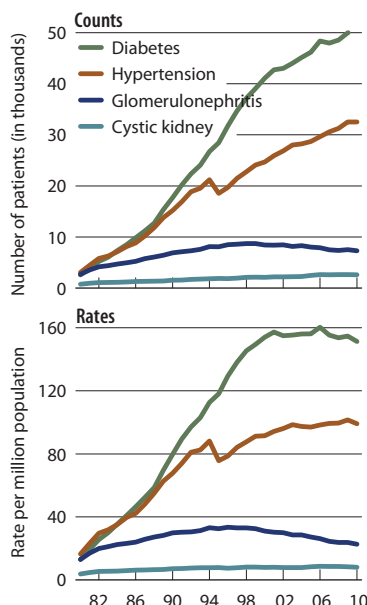
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Incident counts & adjusted rates of ESRD, by Hispanic ethnicity



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Incident counts & adjusted rates of ESRD, by primary diagnosis



Since 2000, the adjusted incident rate of ESRD has grown 12.2 percent for patients age 75 and older, to 1,773 per million population in 2010, while rates for those age 0–19 and 20–44 have increased 9.1 and 6.3 percent, respectively, to 15.5 and 128. Rates for patients age 45–64 and 65–74, in contrast, though rising slightly during the decade, are now 5.3 and 3.1 percent lower than in 2000, at 581 and 1,368 per million, respectively.

By race, rates for blacks/African Americans and Native Americans in 2010 were 924 and 465 per million population, respectively—3.4 and 0.5 times greater than the rate of 276 found among whites. Since 2000, the rate of new ESRD cases has grown 6.1 percent among whites and 2.5 percent among Asians, while decreasing 7.0 percent in the black/African American population.

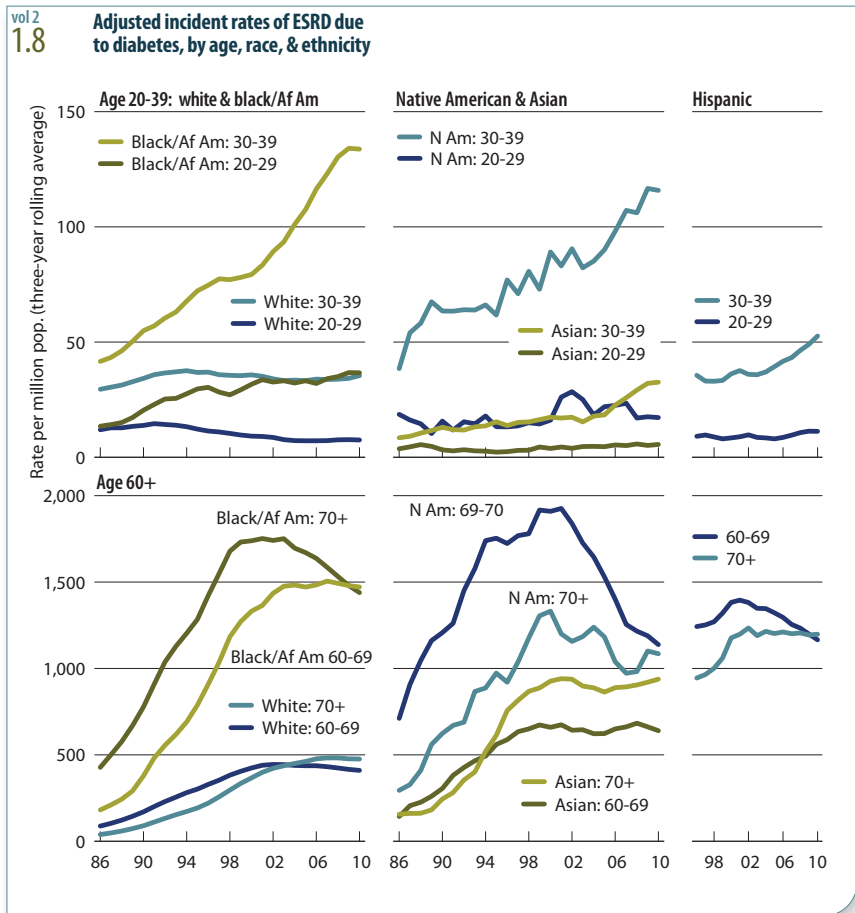
Thirteen percent of new ESRD patients in 2010 were Hispanic, a rate unchanged from those of the previous two years. While their rate of ESRD fell 1.7 percent, to 501, it remains 1.5 times greater than that seen among non-Hispanics.

With the exception of an uptick in 2006, the rate of new ESRD cases caused by diabetes has remained quite stable since 2000, reaching 152 per million population in 2010. The rate of ESRD due to hypertension, while down 2.2 percent in 2010, is 7.7 percent higher than the 2000 rate, at 99, while the rate of ESRD due to glomerulonephritis has fallen 27 percent, to 22.7. » **Figures 1.4–7;** see page 429 for analytical methods. *Incident ESRD patients. Adj: gender/race (1.4), age/gender (1.5–6), age/gender/race (1.7); ref: 2005 ESRD patients.*

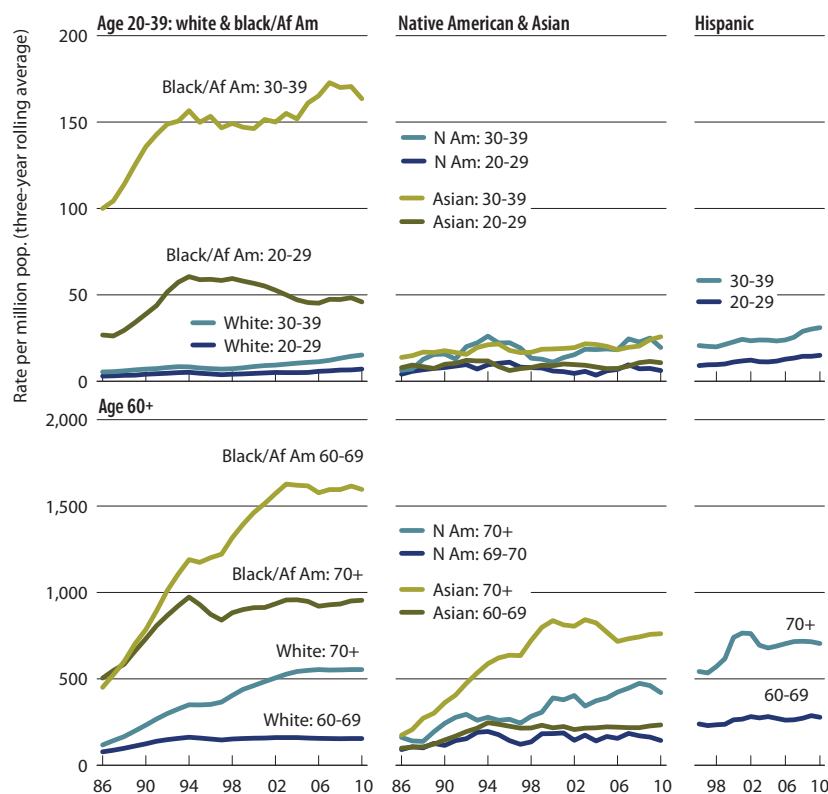
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ESRD
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Both the rates of incident ESRD caused by diabetes and their growth over time continue to vary widely by age and race/ethnicity. Among whites age 30–39, for example, the incident rate (adjusted for gender) has fallen just 1.0 percent since 2000, and in 2010 was 35.4 per million population. For blacks/African Americans of the same age, in contrast, the rate has increased 69 percent since 2000, to reach 133.8. The Native American population has seen a rise of 30.1 percent for this age group over the same time period, reaching 116 per million in 2010. And while rates of new ESRD cases among Asians remain comparatively low, among those age 30–39 they have nearly doubled since 2000, reaching 32.6 per million population in 2010.

Different patterns are seen among older populations. Among whites age 60–69, the rate of incident ESRD due to diabetes has fallen 3.6 percent since 2000, in contrast to a 29 percent increase in those age 70 and older. In blacks/African Americans, the rate for those age 60–69 has fallen 17.2 percent since 2000, while rates have decreased 40.4 and 18.4 percent, respectively, in Native Americans age 60–69 and those 70 and older. The rate for Hispanics age 60–69 has fallen 15.7 percent since 2000, to 1,166 in 2010, but has now surpassed the 2010 rate of 1,138 found in Native Americans of the same age. » [Figure 1.8](#); see page 429 for analytical methods. *Incident ESRD patients; rates are three-year rolling averages. Adj: gender; ref: 2005 ESRD patients.*



Adjusted incident rates of ESRD due to hypertension, by age, race, & ethnicity



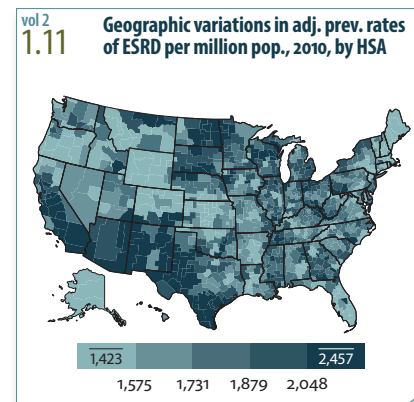
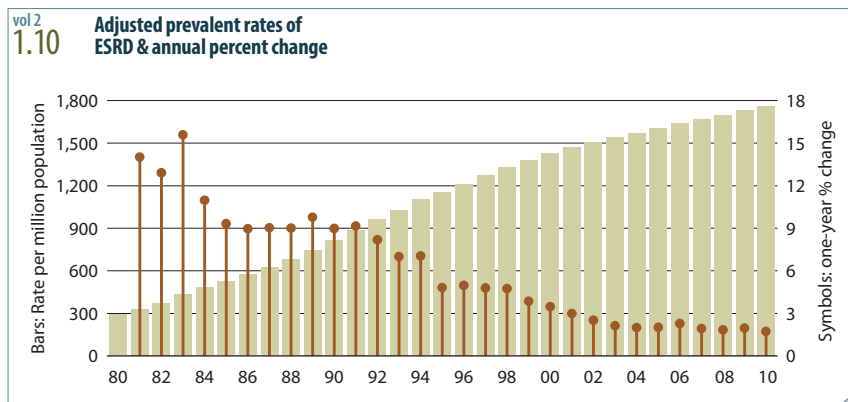
As with diabetic ESRD, there are significant disparities by age, race, and ethnicity in the incidence of ESRD due to hypertension. Among whites age 30–39, for example, the rate per million population (adjusted for gender) rose 78 percent to between 2000 and 2010, to reach 15.3. The rate for blacks/African Americans of the same age rose at a far slower pace of 11.8 percent, but reached nearly 164 per million population — nearly 11 times greater than that of their white counterparts.

Between 2000 and 2010, rates rose 19.8 and 9.2 percent in whites and blacks/African Americans age 70 and older, to reach 554 and 1,597. The rate increased 7.6 percent among Native Americans of the same age, reaching 420, but fell almost 22 percent in those age 60–69, to 143.6.

The rate for blacks/African Americans age 60–69 was 955 per million population in 2010, 6.2 percent higher than the rate of 155 found in whites of the same age. » **Figure 1.9;** see page 429 for analytical methods. Incident ESRD patients; rates are three-year rolling averages. Adj: gender; ref: 2005 ESRD patients.

The adjusted rate of prevalent cases of end-stage renal disease rose 1.7 percent in 2010 — slightly lower than the 1.9 percent growth in 2009 — to 1,763 per million population. This rate is 21 percent higher than that seen in 2000. The annual rate of increase has remained between 1.7 and 2.3 percent since 2004. » **Figure 1.10**; see page 429 for analytical methods. *December 31 point prevalent ESRD patients. Adj: age/gender/race; ref: 2005 ESRD patients.*

In 2010, the rate of prevalent ESRD was 1,752 per million population. Patterns generally follow those found in the incident population, with an additional pocket of higher rates in the Dakotas and Minnesota. Rates in the upper quintile average 2,457. (Rates are not adjusted for ethnicity.) » **Figure 1.11**; see page 429 for analytical methods. *Dec. 31 point prev. pts. Adj: age/gender/race; ref: 2005 ESRD pts.*



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1.b Patient demographics & adjusted rates, by ESRD network: December 31 point prevalent dialysis patients, 2010

	All pts	% of total	Rate/ million	Mean age	% DM	% White	% B/Af Am	% N Am	% Asian	% Hisp.
1	12,921	3.1	809	64.3	39.6	74.2	21.6	0.2	3.3	9.8
2	26,492	6.4	1,267	62.7	40.6	51.2	40.5	0.5	6.0	15.3
3	16,874	4.1	1,258	62.8	47.5	60.5	33.6	0.1	3.7	36.8
4	17,696	4.3	1,206	62.9	41.0	62.3	35.5	0.1	1.7	4.3
5	23,639	5.7	1,336	61.0	39.2	35.8	60.2	0.1	2.9	3.5
6	39,450	9.5	1,497	59.2	40.8	30.8	67.0	0.6	1.2	2.6
7	24,218	5.8	1,174	61.7	40.8	54.9	42.2	0.3	2.0	16.1
8	23,331	5.6	1,537	59.3	40.6	37.2	61.6	0.5	0.5	0.8
9	29,183	7.0	1,209	62.1	44.0	64.7	34.2	0.1	0.8	2.1
10	17,219	4.2	1,251	61.8	39.2	54.2	41.7	0.1	3.4	13.6
11	25,140	6.1	1,022	62.8	41.5	62.3	31.8	3.1	2.6	4.2
12	14,578	3.5	983	61.8	41.0	66.7	30.3	1.0	1.5	4.7
13	16,490	4.0	1,371	59.2	42.8	42.3	51.3	5.1	1.1	2.9
14	38,400	9.3	1,405	59.3	53.1	67.0	30.0	0.3	2.1	44.2
15	19,651	4.7	918	60.9	52.2	70.9	11.3	13.2	4.4	29.6
16	11,600	2.8	775	61.3	42.7	77.1	9.1	4.3	9.3	10.3
17	22,482	5.4	1,299	61.4	49.9	50.6	15.4	0.9	31.9	23.3
18	35,629	8.6	1,408	61.0	48.6	70.3	15.6	0.5	13.1	46.9
Unk	20	0.0	.	43.6	5.0	5.0	10.0	0.0	25.0	5.0
All	415,013	100.0	1,218	61.2	44.1	56.0	36.8	1.5	5.1	16.7

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1.c Patient demographics & adjusted rates, by ESRD network: December 31 point prevalent transplant patients, 2010

	All pts	% of total	Rate/ million	Mean age	% DM	% White	% B/Af Am	% N Am	% Asian	% Hisp.
1	8,626	4.8	548.1	53.0	20.2	80.9	12.1	0.3	5.4	8.4
2	11,798	6.6	558.3	52.5	20.1	65.2	23.1	0.8	8.2	17.8
3	5,158	2.9	452.2	52.3	22.8	68.2	22.3	0.4	5.9	31.2
4	10,310	5.8	707.9	53.3	22.5	71.5	21.1	0.4	5.1	3.6
5	11,108	6.2	639.0	52.7	21.9	54.5	37.0	0.7	6.0	4.6
6	10,828	6.0	428.4	51.2	23.2	56.0	39.6	0.9	3.0	2.7
7	9,369	5.2	469.8	53.6	22.0	70.0	24.1	0.5	4.1	18.1
8	8,021	4.5	548.0	51.1	20.9	63.1	34.2	0.4	1.8	1.1
9	12,542	7.0	530.1	52.3	25.1	78.8	17.3	0.2	2.8	1.7
10	7,762	4.3	549.5	51.4	23.5	65.0	25.5	0.6	6.2	15.0
11	18,789	10.5	789.4	52.9	27.3	81.1	12.8	1.8	3.7	3.4
12	8,375	4.7	584.4	52.2	23.0	81.3	14.5	0.8	3.0	4.9
13	5,330	3.0	458.1	51.5	24.2	61.5	32.8	3.0	2.2	3.0
14	12,555	7.0	464.0	50.7	25.3	76.2	17.3	0.5	4.7	37.6
15	9,460	5.3	455.3	52.1	28.5	83.3	5.4	6.0	4.9	21.6
16	6,586	3.7	451.3	52.9	23.9	82.6	6.0	2.4	8.7	7.4
17	9,577	5.3	578.9	52.1	21.6	63.1	8.9	0.9	24.6	21.2
18	12,746	7.1	511.4	50.6	19.7	72.9	10.9	0.5	14.6	38.9
Unk	421	0.2	.	43.9	0.0	8.6	3.1	6.4	44.9	0.0
All	179,361	100.0	537.5	52.1	23.2	71.3	19.7	1.1	6.5	13.5

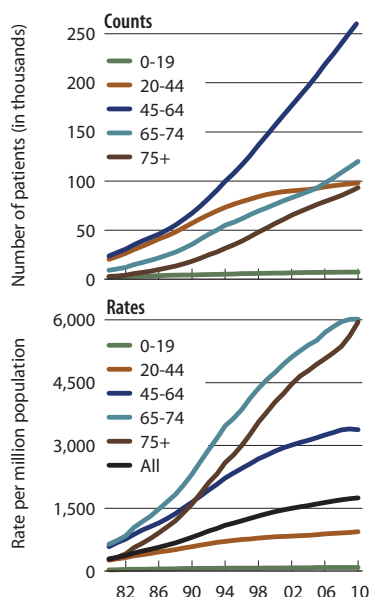
In 2010, the overall rate for December 31 point prevalent dialysis patients was 1,218 per million population. The percentage of prevalent dialysis patients with ESRD caused by diabetes ranges from 40 in Networks 1, 5, and 10 to 52–53 in Networks 14 and 15. » **Table 1.b**; see page 429 for analytical methods. *December 31 point prevalent dialysis patients. Adj: age/gender/race; ref: 2005 patients.* “.” Zero values in this cell.

For December 31, 2010 point prevalent transplant patients, the adjusted rate per million population is lowest in Network 6, at 428, and greatest in Network 11, at 789. As in the incident population, racial disparities persist. In Network 6, for example, blacks/African Americans account for 67 percent of prevalent dialysis patients, but only 39.6 percent of the prevalent transplant population. » **Table 1.c**; see page 429 for analytical methods. *December 31 point prevalent transplant patients. Adj: age/gender/race; ref: 2005 patients.* “.” Zero values in this cell.

prevalent counts & adjusted rates

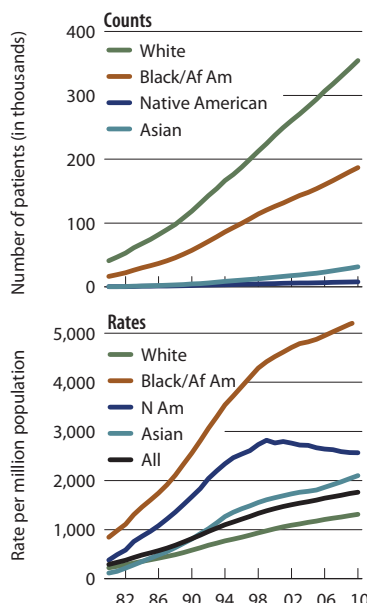
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Prevalent counts & adjusted rates of ESRD, by age



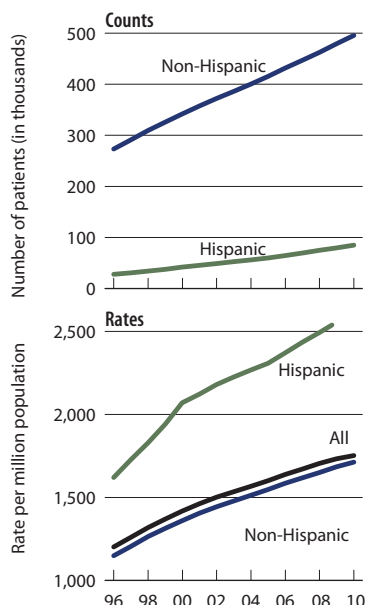
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Prevalent counts & adjusted rates of ESRD, by race



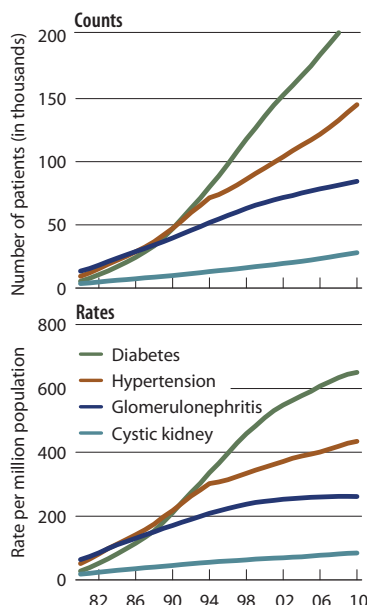
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Prevalent counts & adjusted rates of ESRD, by Hispanic ethnicity



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Prevalent counts & adjusted rates of ESRD, by primary diagnosis



Reaching 6,068 per million population in 2010, the adjusted rate of prevalent ESRD for patients age 65–74 has increased 27 percent since 2000, while the rate among those age 75 and older has grown 44 percent, to 5,865. Among those age 20–44 and 45–64, in contrast, growth has been 14 and 19 percent, respectively, to 940 and 3,402 per million.

By race, rates of prevalent ESRD remain greatest in the black/African American and Native American populations, at 5,242 and 2,566 per million population in 2010, compared to 1,311 and 2,101 among whites and Asians. The rate among Hispanics reached 2,606 in 2010, 1.5 times greater than that in the non-Hispanic population.

Rates of ESRD due to diabetes and hypertension rose 1.8 and 2.1 percent, respectively, in 2010, to 656 and 437 per million population. ESRD caused by cystic kidney disease rose 1.8 percent, to 85 per million, and ESRD due to glomerulonephritis remained stable, at 263. » **Figures 1.12–15;** see page 429 for analytical methods. December 31 point prevalent ESRD patients. Adj: gender/race (1.12); age/gender (1.13–14); age/gender/race (1.15); ref: 2005 ESRD patients.

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In 2010, 103,874 new patients began ESRD therapy on hemodialysis, 7,586 were placed on peritoneal dialysis, and 2,572 received a preemptive transplant (these data exclude patients with missing demographic information). Rates per million population were 316, 23.3, and 7.9, respectively.

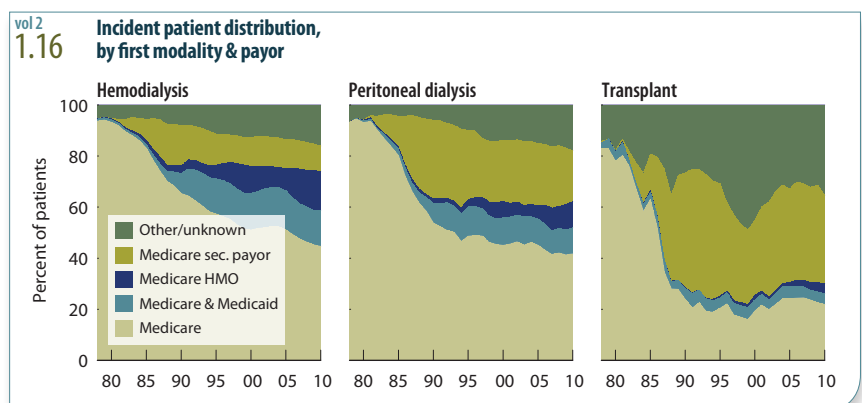
Past studies have suggested high mortality and significant movement between modalities in the first 90 days after ESRD initiation. The total number of 2010 incident patients with a known modality fell 11.4 percent between initiation and day 90. The hemodialysis population at day 90 was 13 percent smaller than at initiation; the peritoneal dialysis and transplant populations, in contrast, gained 5 and 22 percent, respectively.

Between initiation and day 90, the rate per million population for hemodialysis fell from 316 to 273, while the rate for transplant rose from 7.9 to 9.7, and that for peritoneal dialysis rose from 23.3 to 24.6.

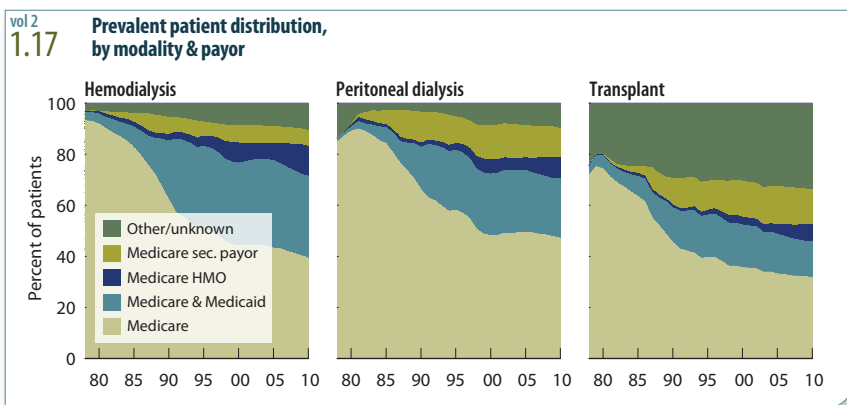
At one year, the total number of patients with a known modality was 16.6 percent smaller than at day 90, and 26 percent smaller than at initiation. The rate per million population fell to 220 for hemodialysis, 20.8 for peritoneal dialysis, and 15.7 for transplant. » **Table 1.d**; see page 429 for analytical methods. *Incident ESRD patients, 2010; unknowns dropped. Adj: age, gender, race. Ref: 2005 ESRD patients.*

Incident counts & adjusted rates of ESRD at initiation, day 90, & one year, by modality, age, gender, race, ethnicity, & primary diagnosis, 2010																		
	At initiation						At day 90						At one year					
	Number of patients			Rate/million population			Number of patients			Rate/million population			Number of patients			Rate/million population		
	HD	PD	Tx	HD	PD	Tx	HD	PD	Tx	HD	PD	Tx	HD	PD	Tx	HD	PD	Tx
0-19	676	418	202	7.9	5.1	2.3	595	420	246	6.9	5.1	2.9	423	274	485	4.8	3.3	5.7
20-44	11,527	1,272	605	109.7	12.1	5.6	10,591	1,377	784	100.5	13.1	7.2	9,465	1,295	1,454	89.7	12.3	13.7
45-64	39,092	3,261	1,310	520.5	42.4	16.4	35,120	3,442	1,601	467.6	44.5	19.9	30,077	2,956	2,381	399.7	38.0	29.7
65-74	25,056	1,558	415	1,270.9	75.6	18.7	21,423	1,624	463	1,093.3	78.6	20.6	16,864	1,370	650	864.6	65.8	29.5
75+	27,523	1,077	40	1,707.5	61.4	2.0	22,208	1,134	53	1,384.7	64.6	2.6	15,711	841	75	978.8	46.9	3.9
Male	59,174	4,237	1,494	403.0	28.0	9.5	51,182	4,543	1,841	346.8	30.0	11.7	40,997	3,804	2,986	275.3	25.1	19.1
Female	44,700	3,349	1,078	248.6	19.5	6.4	38,755	3,454	1,306	215.8	20.2	7.8	31,543	2,932	2,059	176.0	17.2	12.6
White	68,273	5,399	1,842	247.6	20.1	7.0	57,210	5,715	2,325	207.8	21.3	8.9	44,014	4,765	3,787	160.4	17.8	14.7
Black/Af Am	29,787	1,667	232	871.5	45.0	6.0	27,374	1,712	291	795.0	46.1	7.4	23,881	1,490	560	683.3	39.6	14.3
N Am	1,254	70	65	427.0	20.6	17.2	1,165	87	67	394.5	26.1	17.5	1,031	89	84	345.8	27.1	21.4
Asian	4,560	450	433	332.2	29.6	25.6	4,188	483	464	301.7	31.9	27.4	3,614	392	614	256.3	25.4	36.4
Hispanic	14,157	892	224	470.5	24.5	5.6	12,802	965	282	420.7	26.3	6.8	10,867	837	520	350.4	23.2	12.1
Non-Hisp.	89,717	6,694	2,348	305.3	23.4	8.5	77,135	7,032	2,865	263.2	24.6	10.4	61,673	5,899	4,525	211.3	20.7	16.6
Diabetes	46,820	3,009	476	141.0	9.1	1.5	42,308	3,213	610	127.3	9.7	1.9	35,115	2,680	1,157	105.4	8.1	3.6
HTN	30,324	1,903	283	92.3	5.8	0.8	26,527	2,024	385	80.7	6.2	1.1	21,209	1,722	721	64.6	5.3	2.2
GN	5,759	1,000	531	17.9	3.1	1.7	5,280	1,042	636	16.4	3.3	2.0	4,615	854	1,053	14.3	2.7	3.4
Cystic kidney	1,672	437	481	5.2	1.4	1.5	1,558	456	540	4.9	1.4	1.7	1,425	377	686	4.5	1.2	2.2
Oth. urologic	1,377	99	63	4.2	0.3	0.2	1,159	96	80	3.5	0.3	0.3	923	95	112	2.8	0.3	0.4
Oth. cause	13,443	829	499	41.5	2.6	1.5	9,561	848	613	29.5	2.7	1.9	6,520	757	933	20.2	2.4	2.9
Unk./missing	4,479	309	239	13.7	1.0	0.7	3,544	318	283	10.9	1.0	0.9	2,733	251	383	8.4	0.8	1.2
All	103,874	7,586	2,572	315.8	23.3	7.9	89,937	7,997	3,147	273.2	24.6	9.7	72,540	6,736	5,045	220.1	20.8	15.7

Forty-five percent of new hemodialysis patients in 2010 were covered solely by Medicare, 14 percent had dual Medicare/Medicaid coverage, and 15.6 percent were covered by a Medicare HMO provider. Medicare covered 42 and 22 percent of new peritoneal dialysis and transplant patients, while 10.2 and 4.3 percent were dually-enrolled, and 10.3 and 3.9 percent had HMO coverage. » **Figure 1.16**; see page 429 for analytical methods. *Incident ESRD patients; peritoneal dialysis consists of CAPD & CCPD only.*



	Number of patients			Rate per million population		
	HD	PD	Tx	HD	PD	Tx
0-19	1,355	900	5,094	15.4	10.8	59.7
20-44	49,429	6,007	42,572	469.9	57.3	409.9
45-64	157,520	12,987	90,938	2,088.7	166.0	1,140.4
65-74	85,871	5,605	28,275	4,450.1	268.0	1,343.4
75+	82,177	3,768	7,257	5,252.9	214.1	394.6
Male	209,456	15,519	103,554	1,399.3	101.8	664.6
Female	166,896	13,748	70,582	920.2	80.2	422.2
White	208,434	19,356	126,059	756.9	72.2	479.6
Black/African Am	143,862	7,586	35,034	4,109.3	199.5	925.6
Native American	5,666	351	1,941	1,895.7	107.0	560.3
Asian	18,390	1,974	11,102	1,297.0	126.9	673.7
Hispanic	59,294	3,778	21,990	1,920.9	102.1	579.0
Non-Hispanic	317,058	25,489	152,146	1,083.5	89.4	541.1
Diabetes	168,582	9,980	41,006	500.5	29.9	124.7
Hypertension	109,265	7,512	28,234	328.7	22.9	85.2
Glomerulonephritis	34,527	4,833	44,958	106.6	15.1	140.5
Cystic kidney	9,179	1,560	17,170	28.1	4.8	51.8
Other urologic	6,530	576	5,791	20.1	1.8	18.5
Other cause	34,334	3,652	26,320	106.0	11.5	83.6
Unknown/missing	13,935	1,154	10,657	42.5	3.6	33.2
All	376,352	29,267	174,136	1,132.5	89.6	537.5



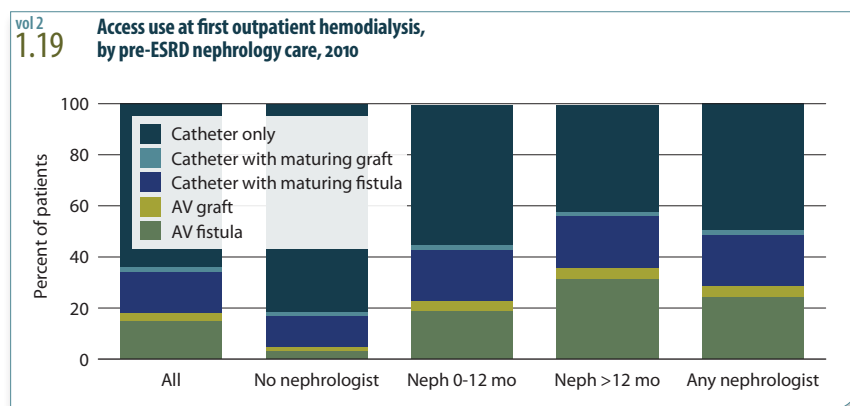
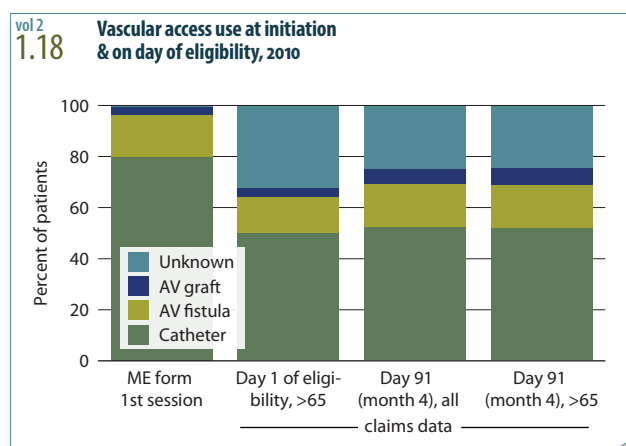
On December 31, 2010, more than 376,000 ESRD patients were receiving hemodialysis therapy, 29,267 were being treated with peritoneal dialysis, and 174,136 had a functioning graft. Rates of ESRD in the prevalent population continue to be highest among blacks/African Americans, at 4,109 per million population for hemodialysis, 199.5 for peritoneal dialysis, and 925.6 for transplant. Prevalent rates for Asian patients on peritoneal dialysis or with a transplant are higher than those of their Native American counterparts. At 1,896, however, the rate of Native Americans receiving hemodialysis is 46 percent greater than that found in the Asian population, and more than double that found in whites. » [Table 1.e](#); see page 429 for analytical methods. December 31 point prevalent ESRD patients, 2010; unknowns dropped. Adj: age, gender, race. Ref: 2005 ESRD patients

Nine of ten prevalent hemodialysis patients had some type of Medicare coverage in 2010, with 39 percent covered solely by Medicare, and 32 percent under Medicare/Medicaid. In the transplant population, in contrast, nearly one-third were covered solely by Medicare. Transplant patients younger than 65 and not disabled lose their entitlement after three years with a functioning graft. Coverage by non-Medicare insurers continues to increase in the dialysis population, in 2010 reaching 10.7 and 10.0 percent for hemodialysis and peritoneal dialysis patients, respectively. » [Figure 1.17](#); see page 429 for analytical methods. December 31 prevalent ESRD patients; peritoneal dialysis consists of CAPD & CCPD only.

Forty-three percent of patients starting ESRD therapy in 2010 had not seen a nephrologist prior to initiation. Of these patients, 89 percent initiated with a catheter and only 3 percent with a mature fistula; 13 percent had a maturing internal access. Patients with more than one year of pre-ESRD nephrologist care, in contrast, were far more likely to initiate with a mature fistula, at 26.3 percent. » [Table 1.f](#); see page 429 for analytical methods. *Incident ESRD patients, 2010.*

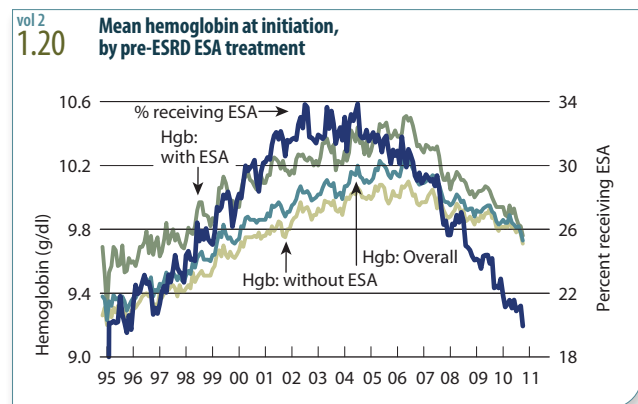
vol 2 1.f Pre-ESRD nephrologist care (column percent), 2010			
	None	0–12 mo.	>12 mo.
All	43.0	31.7	25.4
Mean age (yrs)	61.6	62.7	63.7
0–19	1.1	1.2	1.4
20–44	13.6	11.3	9.6
45–64	39.7	38.4	36.4
65–74	21.9	24.2	25.8
75+	23.7	24.9	26.7
Female	42.8	43.4	42.8
Race			
White	63.2	65.7	70.6
Black/Af Am	29.6	27.6	23.3
Native American	1.2	1.4	1.1
Asian	4.9	5.2	4.9
Hispanic	17.0	13.4	11.1
Access at initiation			
Catheter	88.9	68.0	53.5
Fistula	3.2	16.9	26.3
Graft	1.2	3.4	4.0
Maturing fistula	11.3	17.9	17.1
Maturing graft	1.7	2.5	2.0
ESA use	2.0	31.5	41.8
Dietary care	0.2	14.1	17.1
eGFR			
<5	9.5	5.2	5.1
5–<10	35.4	36.4	38.4
10–<15	28.6	36.1	36.7
≥15	19.5	20.1	18.5
DM (comorbidity)	49.4	56.9	55.8
Primary diagnosis			
Diabetes	38.9	49.1	46.9
Hypertension	28.9	28.0	26.9
Glomerulonephritis	4.7	6.6	8.9
Cystic kidney	0.9	2.2	4.6

Data from the Medical Evidence form indicate that nearly 80 percent of 2010 incident hemodialysis patients initiated treatment with a catheter as their vascular access, 16.3 percent started with an arteriovenous (AV) fistula, and 3.2 percent initiated with an AV graft. By month four (day 91) of treatment, claims data show rates of catheter, AV fistula, and AV graft use were 52.6, 16.7, and 5.9 percent, respectively. » [Figure 1.18](#); see page 429 for analytical methods. *Incident hemodialysis patients, July–December, 2010.*

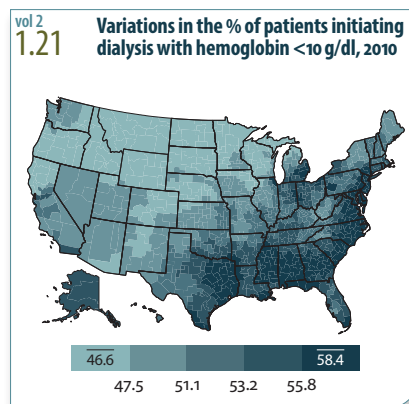


Among hemodialysis patients who have seen a nephrologist for more than a year prior to starting ESRD therapy, 41.8 percent initiate treatment using a catheter; these patients have the greatest likelihood at initiation of having an arteriovenous fistula (AV) or maturing fistula, at 31.3 and 20.1 percent, respectively. Patients with no pre-ESRD nephrology care most frequently start treatment with a catheter, at 81 percent, while only 18.4 percent initiate with either a mature or maturing AV fistula or graft. » [Figure 1.19](#); see page 429 for analytical methods. *Incident hemodialysis patients, 2010.*

In the incident ESRD population, the mean hemoglobin at initiation has continued to fall from its peak in 2006, reaching 9.73 g/dl overall, 9.76 for patients receiving pre-ESRD treatment with an erythropoiesis stimulating agent (ESA), and 9.71 for patients without ESA treatment. At the end of 2010, 20 percent of new patients had received a pre-ESRD ESA. » [Figure 1.20](#); see page 429 for analytical methods. *Incident ESRD patients.*



The percentage of patients initiating dialysis with a hemoglobin less than 10 g/dl is highest in parts of Texas and states along the Gulf Coast and Atlantic Seaboard, averaging 58.4 percent in the upper quintile. » [Figure 1.21](#); see page 429 for analytical methods. *Incident ESRD patients.*

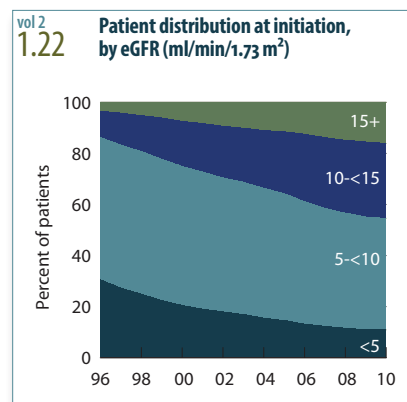


vol 2
1.g Percent of patients initiating dialysis with laboratory values outside the test's normal limit, by age, gender, race, ethnicity, & primary diagnosis, 2010

	Serum albumin	Hemoglobin <10 g/dl	Total cholesterol >200 mg/dl	LDL >100 mg/dl	HDL <40 mg/dl	Triglycerides >150 mg/dl	A1c* >7%
Age	54.9	59.6	26.2	43.3	57.1	44.8	34.3
20-44	57.6	56.2	18.8	31.7	58.2	42.4	32.2
45-64	56.8	54.1	12.9	23.5	59.0	36.8	26.8
65-74	57.8	51.7	8.8	19.3	56.3	28.5	18.6
75+							
Gender	55.6	53.4	13.1	25.8	65.2	36.6	28.0
Male	58.7	56.9	20.5	32.1	46.9	40.7	28.2
Female							
Race	56.4	52.0	14.6	25.6	62.0	41.0	28.8
White	58.6	62.4	19.8	35.0	49.0	30.7	26.1
Black/Af Am	66.8	55.3	12.4	23.7	54.2	40.3	33.9
Native American	53.2	52.9	17.6	29.5	51.9	41.1	27.1
Asian	59.2	57.1	17.1	29.3	59.4	43.7	31.7
Hispanic							
Primary diagnosis	61.8	56.6	15.4	26.6	58.5	39.0	35.6
Diabetes	51.5	53.6	14.3	28.0	55.9	32.5	14.0
Hypertension	49.0	51.1	26.2	38.8	53.9	46.9	9.4
Glomerulonephritis	22.7	35.4	16.2	32.3	55.7	41.0	4.5
Cystic kidney	56.9	55.0	16.1	28.3	57.8	38.3	28.1
All	56.9	55.0	16.1	28.3	57.8	38.3	28.1

eGFR: ml/min/1.73 m²; serum albumin < lab lower limit.
*A1c data include only patients with diabetes as their primary diagnosis or as a comorbidity.

The likelihood of starting dialysis with laboratory values outside the normal limit is, with few exceptions, similar across demographic and disease categories. Overall, 56.9 percent of patients start treatment with a serum albumin below the test's lower limit, and 55 percent have a hemoglobin less than 10 g/dl. Sixteen percent initiate with a total cholesterol greater than 200 mg/dl, 28.3 percent have low density lipid (LDL) measurements more than 100 mg/dl, and 58 percent have high density lipid (HDL) levels below the Adult Treatment Panel (ATP) III target of 40 mg/dl. Triglyceride levels above 150 mg/dl occur in 38.3 percent of incident patients, and 28 percent have a glycosylated hemoglobin (A1c) level above the recommended maximum of 7 percent. » [Table 1.g](#); see page 429 for analytical methods. *Incident ESRD patients, 2010.*



Comparisons of estimated glomerular filtration rates (eGFRs) at the initiation of ESRD therapy indicate that patients are starting treatment sooner than in the past. In 2010, 29 percent initiated treatment with an eGFR of 10-15 ml/min/1.73 m², compared to 17.7 percent in 2000. And 16 percent started with an eGFR of 15 or greater, in contrast to 7.4 percent in 2000. » [Figure 1.22](#); see page 429 for analytical methods. *Incident ESRD patients.*

INCIDENT COUNTS & RATES

number of new ESRD patients, 2010 (Figures 1.5–7)

» white · 75,690 » black/African American · 31,739 » Native American · 1,390 » Asian · 5,462
 » Hispanic · 15,284 » non-Hispanic · 98,997
 » diabetes · 50,356 » hypertension · 32,537 » glomerulonephritis · 7,312 » cystic kidney disease · 2,605

adjusted rates of incident ESRD, 2010 (per million population; Figures 1.5–7)

» overall · 348
 » white · 275 » black/African American · 924 » Native American · 465 » Asian · 389
 » Hispanic · 501 » non-Hispanic · 338
 » diabetes · 152 » hypertension · 99 » glomerulonephritis · 22.7 » cystic kidney disease · 8.1

INCIDENT RATES & RACIAL DIFFERENCES

adjusted incident rates of ESRD due to diabetes (per million population; Figure 1.8)

white	» age 20–29 · 7.6	» age 30–39 · 35	» age 60–69 · 410	» age 70+ · 476
black/African American	· 37	· 134	· 1,440	· 1,472
Native American	· 17	· 116	· 1,138	· 1,086
Asian	· 5.6	· 33	· 641	· 938
Hispanic	· 11	· 53	· 1,166	· 1,198

adjusted incident rates of ESRD due to hypertension (per million population; Figure 1.9)

white	» age 20–29 · 7.1	» age 30–39 · 15	» age 60–69 · 155	» age 70+ · 554
black/African American	· 46	· 164	· 955	· 1,597
Native American	· 6.3	· 20	· 144	· 420
Asian	· 10.8	· 26	· 233	· 761
Hispanic	· 15.1	· 31	· 278	· 706

PREVALENT COUNTS & RATES

number of prevalent ESRD patients, 2010 (Figures 1.13–15)

» white · 354,460 » black/African American · 186,785 » Native American · 7,968 » Asian · 31,528
 » Hispanic · 85,202 » non-Hispanic · 495,539
 » diabetes · 219,794 » hypertension · 145,182 » glomerulonephritis · 84,521 » cystic kidney disease · 27,960

adjusted rates of prevalent ESRD, 2010 (per million population; Figures 1.13–15)

» overall · 1,763
 » white · 1,311 » black/African American · 5,242 » Native American · 2,566 » Asian · 2,101
 » Hispanic · 2,606 » non-Hispanic · 1,717
 » diabetes · 656 » hypertension · 437 » glomerulonephritis · 263 » cystic kidney disease · 85

INCIDENT & PREVALENT MODALITY

adjusted rates of ESRD at initiation, day 90, & one year, 2010 (per million population; Table 1.d)

at initiation	» hemodialysis · 316	» peritoneal dialysis · 23.3	» transplant · 7.9
at day 90	· 273	· 24.6	· 9.7
at one year	· 220	· 20.8	· 15.7

PATIENT CHARACTERISTICS

patients using an erythropoiesis stimulating agent at initiation, by pre-ESRD nephrologist care, 2010 (Table 1.f)

» no nephrology care · 2.0% » 0–12 months · 32% » more than 12 months · 42%

patients with hemoglobin less than 10 g/dl at initiation, 2010 (Table 1.g)

» overall · 55%
 » white · 52% » black/African American · 62% » Native American · 55% » Asian · 53% » Hispanic · 57%