Though we live in a world that dreams of ending that always seems about to give in something that will not acknowledge conclusion insists that we forever begin.

Brendan Kennelly
“Begin”
based on the number of patients per million people in the general population, and are adjusted for age, gender, and race. This classic approach is used because it is often difficult to define the true at-risk population for a specific disease. This year, however, we use the CDC’s county-level estimates of diabetes in the U.S. (reported by the National Center for Health Statistics) to look at the incidence of ESRD caused by diabetes, comparing these rates in the true at-risk diabetes population to those calculated by the classic method to determine if we are making progress in slowing the rise of diabetic ESRD.

In rates based on this at-risk population, the incidence of ESRD due to diabetes has been falling since the mid-1990s. This is in contrast to data reported by the USRDS, which use the general population as the at-risk group, and show that diabetic ESRD rates peaked in 2003–2004 and have since remained relatively flat. Progress appearing when the diabetic population is used as the at-risk group should thus be viewed with some caution. Growth in the number of newly diagnosed diabetic patients in the U.S. has quickened since the mid-1990s. These patients may take much longer to develop ESRD than those previously diagnosed, creating a lead-time bias which dilutes the denominator and lowers the rates of ESRD.

In the last five years the USRDS has noted a continued growth in the number of treated patients, but a slowing of the incident rates. More than 106,000 new patients began therapy for ESRD in 2005 (2.0 percent more than in 2004), while the prevalent dialysis population reached 341,000 (3.3 percent more), and the prevalent transplant population grew to more than 143,693 (5.6 percent more). Both prevalent populations have more than tripled since 1988, while the number of incident patients has grown 159 percent. Since 1999, however, incident rates have been relatively stable, ranging from 333.1 per million population that year to 347.1 in 2005.

The median age of the incident population has reached 64.6. With continued growth in the baby boomer population, the disease rate for this group has begun to flatten. Rates of new ESRD due to diabetes remained fairly stable in 2005, at 152, and adjusted rates for ESRD due to glomerulonephritis have in fact been falling, from a peak of 33.1 in 1994 to 26.5 in 2005.

Even after adjustments for age, gender, race, and primary cause of ESRD, rates of ESRD vary widely across the U.S. This year we present new data on ESRD in the major metropolitan statistical areas (MSAs) of the country. Among African Americans, for instance, the incidence of ESRD is greatest in the Pittsburgh, Pennsylvania MSA, while for whites (includes Hispanic whites) it is highest in the Los Angeles, California MSA. These variations may reflect different burdens of chronic kidney disease, as well as regional differences in the use of detection efforts and treatment interventions in populations at risk for kidney failure.

Prevalent counts continue to rise, particularly for patients age 45–64, and the rate of prevalent ESRD rose 1.9 percent in 2005 to reach 1,569 per
million population. In absolute numbers, the fastest growth is occurring among patients age 45–64; rates, however, are rising most quickly among those age 65 and older. Regional variations in ESRD prevalence reflect differences in adjusted survival, in part related to higher rates of transplantation in certain areas of the U.S.

This year we revisit earlier projections of the ESRD population, and update them to 2020. These projections show important similarities to the actual data. Growth of the prevalent population, for instance, is close to that projected in the 2000 ADR. Incident counts were overestimated by 20 percent, but were within 1 percent of conservative projections published in JASN in 2001 (Xue et al.). Using SAS autoregression models, we now project that the incident population will grow to 143,000 by 2020; with the full Markov model, which addresses changing demographics and the prevalence of diabetes in the U.S. population, we project 150,000. We also estimate a prevalent population nearing 800,000, and a dialysis population of 534,000. While actual growth will depend on care given to those with CKD, results using our current projection model show consistency between historical trends and the time-dependent Markov model.

We also project that total Medicare costs related to ESRD will approach $54 billion by 2020. In the 2000 ADR we estimated an ESRD budget of $28 billion by 2010, and actual numbers have been ahead of these projections. These projections are subject to changes in the payment system and in the development of prevention and treatment programs for CKD and ESRD. We will revisit them in the future, comparing them to actual data to determine the impact of changes in clinical practice and preventive care.

As in prior years, we report here on patients with relatively rare causes of ESRD. Rates for ESRD due to AIDS, for example, have been fairly constant in the last decade. ESRD due to post-transplant (non-renal) complications has been rising, a finding of particular concern.

Still to be determined is whether these data reflect short- or long-term trends, as the emergence of the baby boomers into a senior population may continue to contribute to the growth of the overall ESRD population, even with moderations in disease rates. The growth of diabetes in both the general Medicare population and among younger patients is a concern as well.

\[\text{figure 2.1} \] Projected changes in the composition of the prevalent ESRD population to 2020, by age & race

\[\text{figure 2.2} \] In 2005 the overall adjusted incidence of ESRD again remained stable, with the rate of 347 per million population only 1 percent higher than in 2001. The adjusted prevalence of ESRD reached 1,569 per million population in 2005, 1.4 times higher than in 1995. Annual growth in the rate, however, has slowed, and has been 3.0 percent or lower since 2001. The USRDS projects that there will be nearly 800,000 prevalent ESRD patients receiving therapy in 2020, and that more than 150,000 new patients will begin treatment that year.

\[\text{figure 2.3-37} \] The USRDS projects that there will be nearly 800,000 prevalent ESRD patients receiving therapy in 2020, and that more than 150,000 new patients will begin treatment that year.
in 2005 the overall adjusted incidence of ESRD again remained stable, with the rate of 347 per million population only 1 percent higher than in 2001 (Figure 2.2). In 2005, nearly 77,000 of the new ESRD patients lived in urban areas, and 26,000 in rural settings (Figure 2.3).

The overall median age of new patients has changed little since the late 1990s, and in 2005 was 64.6, with a range from 58.1 in Native Americans to 67.4 in whites (Figure 2.4).

Incident rates between 2000 and 2005 have been relatively steady for most age groups, changing less than 3.0 percent (Figure 2.5). For patients age 75 and older, however, the rate has grown 10 percent, from 1,570 to 1,725 per million.

Incident rates in Medicare Advantage (formerly Medicare + Choice patients) were 20 percent higher in 2005 than those found in patients enrolled in a fee-for-service program (Figure 2.6).

While incident counts and rates by gender have not been changing dramatically in recent years, the gap between males and females continues to widen (Figure 2.7). The number of males beginning ESRD therapy in 2005 was 1.2 times greater than the number of females, and their incident rate was 1.5 times higher, at 434 per million population compared to 281.

By geographic region, the highest incident rates of ESRD continue to occur in the south and southwestern portions of the country—from California east to Texas—and in the Ohio Valley (Figure 2.8). Interestingly, the area of the western Dakotas and eastern Montana, with some of the highest rates in 2000, had some of the lowest rates in 2005.

Racial disparities in ESRD incidence continue to be dramatic (Figure 2.9). Rates in 2005 ranged from 268 per million population among whites to 991 among African Americans, 516 among Native Americans and 355 among Asians—3.7, 1.9, and 1.3 times greater, respectively.

Because the most recent edition of the Medical Evidence form, released in the spring of 2005, no longer contains categories for Mexican or non-Mexican ethnicity, we have revised
2.8 Geographic variations in adjusted incident rates (per million population), by HSA

Figure 2.10 to show differences in Hispanic and non-Hispanic populations. Counts of new Hispanic ESRD patients rose to nearly 12,000 in 2005, a 63 percent growth since 1996, when the Medical Evidence form first began gathering information on ethnicity. The 2005 incident rate for Hispanic patients was 490 per million population, 1.5 times higher than that found among non-Hispanics.

The number of patients with diabetes as the primary cause of ESRD rose 6.6 percent between 2001 and 2005 (Figure 2.11). The incident rate of diabetic ESRD, however, has flattened since a peak in 2001, remaining at 152–153 per million population. One-third of patients start therapy with ESRD caused by hypertension; rates for these patients have been declining slightly since 2003. The largest change in rates by diagnosis has been for those with glomerulonephritis. After reaching a high of 33 per million population in the mid-1990s, the rate fell to 26.5 by 2005, with a one-year decline of nearly 6 percent after 2004.

All figures (a) adjusted for age, gender, & race. Figure 2.2, 2.3, location determined using ZIP code of patient residence. Figure 2.5, 2.6, rates adjusted for gender & race. Figure 2.8, 2.9, rates adjusted for age & race. Figure 2.10, 2.11, by HSA; adjusted for age, gender, & race. Excludes patients residing in Puerto Rico & the Territories. Figures 2.3–9, 10 rates adjusted for age & gender. Figure 2.10, 2.11, rates adjusted for age, gender, & race. For Hispanic patients we present data beginning in 1996, the first full year after the April 1995 introduction of the revised Medical Evidence form, which contains more specific questions on race & ethnicity.

More on incident patient counts & rates: p.2–3 & p.6, Chapter Four, 8.13–14 (pediatric patients).
The incidence of ESRD is likely to be influenced by changing demographics in the general population. In this spread we present information on diabetes in the general population, and illustrate trends in incidence using two different methods.

The National Center for Health Statistics (NCHS), of the Center for Disease Control and Prevention, reports the prevalent level of diabetes in the country using data collected through surveillance programs from state and county departments of health. Based on these data, the incidence of diabetes in the United States has risen to 5.3 percent, with the major growth occurring in those age 45 years and older (Figures 2.13–14).

This at-risk population can be used to compute rates of incident ESRD due to diabetes—a method developed by the CDC and reported in the Morbidity and Mortality Weekly Review (MMWR, 2005). Fig-
Adjusted incident rates of ESRD with diabetes as primary diagnosis, by age and race


Adjusted incident rates of ESRD with diabetes as primary diagnosis, by age & race

Figure 2.19:Adjusted incident rates of ESRD with diabetes as primary diagnosis, by age & race.
Incident rates by metropolitan statistical area (MSA) for whites exceed 300 per million population in the Los Angeles, Riverside-San Bernardino (California), and Houston areas; the lowest rate is found in the Tampa-St. Petersburg MSA, at 199 per million (Table 2.a). Rates for African Americans exceed 1,000 per million population in the Dallas-Fort Worth, Houston, Detroit, Phoenix, Minneapolis-St. Paul, St. Louis, Baltimore, and Cleveland MSAs, and are highest in the Pittsburgh area, at 1,345 per million population. Incident rates for Hispanics are highest in the Minneapolis-Saint Paul area, at 773, while prevalent rates exceed 5,000 per million population for those residing in the St. Louis, Missouri, area.

The relative rate of ESRD amongst white incident patients is highest in the Los Angeles and Houston areas, at 1.39 and 1.26, respectively (Table 2.b). Patients residing in the Los Angeles and Chicago areas have the highest prevalent rate, at 1.42 and 1.17, respectively. Incident relative rates of ESRD for African Americans are highest for those residing in and around Houston, at 1.12, while prevalent rates are highest for those living in the Dallas-Fort-Worth areas, at 1.04.

Geographic patterns show that incident rates for whites are highest in areas of the Southwest, south Texas, and portions of the Ohio Valley, and average 381 per million population for patients residing in areas represented by metropolitan statistical areas (MSAs).

### Table 2.a

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<tr>
<th>MSA</th>
<th>White Inc</th>
<th>White Prev</th>
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### Table 2.b

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by the upper quintile (Figure 2.20). Rates for African Americans are nearly three times those found in whites, and are highest in the south, mid-south, and along the Eastern Seaboard.

Figure 2.21 shows unadjusted incident and prevalent rates and adjusted incident rates of ESRD by MSA. Rates are considerably higher by MSA when compared to overall rates across the country. The overall unadjusted incident rate in 2005 was 347 per million population, while rates in higher density areas appear to be nearly three times greater. These differences may reflect different burdens of chronic kidney disease, as well as regional differences in the use of detection efforts and treatment interventions in populations at risk for kidney failure.

**To read MSA maps**
- Circles represent the summed total of the rates established for each race in their respective MSA.
- Racial segments represent the proportion of the total rate.
- Circle size is graduated relative to the summed total rate in each MSA.
- Adjusted incident rates in the Dallas MSA, for example, are below 900 per million but greater than 180 per million.

**Geographic variations in incident & prevalent rates (per million population) of ESRD, by MSA & race incident & December 31 point prevalent ESRD patients, 2005**
Adjusted prevalence rates & annual percent change

December 31 point prevalent ESRD patients

Counts

Rates

Number of patients (in thousands)

Number of patients (in thousands)

Rate per million population

Rate per million population

Adjusted prevalence of ESRD reached 1,569 in 2005, 1.4 times greater than in 1995 (Figure 2.22). Annual growth in the rate, however, has slowed, and has been 3.0 percent or lower since 2001.

More than 350,000 prevalent patients live in urban areas, and 312,000 in areas classified as rural (Figure 2.23).

The median age of prevalent patients is now 58.6, and it varies little by race or ethnicity, ranging from a low of 56.6 in African Americans to a high of 59.7 in whites (Figure 2.24).

Nearly one in five prevalent patients is age 65–74, and 16 percent are age 75 or older (Figure 2.25). The numbers of patients age 45–64 and age 75 and older have grown 32 percent since 2000; the population age 20–44, in contrast, seems to have plateaued, increasing only 5 percent during the same period. The prevalent rate in 2005 topped 5,500 per million among those age 65–74, and nearly 4,800 for those 75 and above. Across age groups, however, the one-year rate of growth was less than 3 percent.

As in the incident population, differences by gender continue to grow (Figure 2.26). The number of males in the prevalent population increased 25.6 percent between 2000 and 2005, compared to 20.3 percent for females. And the prevalent rate for males grew 14.0 percent, to 1,905 per million population, while that for females rose 9.9 percent, to 1,291.

In the prevalent population, geographic variations in ESRD rates have remained quite consistent since 2000 (Figure 2.27). The highest rates continue to occur in the Dakotas and across the southern states from California to Texas. The mean rate in the upper quintile has increased nearly 48 percent since 2000.

By race, the number of prevalent white, African American, and Native American patients rose 20–23 percent between 2000 and 2005, while the number of Asian patients grew 39 percent (Figure 2.28). The rate per million population rose nearly 15 percent for whites and 8–9 percent for African Americans and Asians; that for Native Americans, in contrast, fell 1.1 percent. Significant differences by race persist, with the 2005 rates per million population of 4,863 and 2,669 for African Americans and Native Americans, respectively, being 2.2 and 2.3 times higher than the rate of 1,151 found among whites.
As mentioned in regard to incidence, the 2005 revision of the Medical Evidence form now eliminates the classification of Hispanic Mexican, and offers two choices of Hispanic ethnicity—“Not Hispanic or Latino,” and “Hispanic or Latino.” In 2005, the prevalence of ESRD among Hispanics was 47 percent higher than that found in non-Hispanics (Figure 2.29). And when using the new classification system, rates for Hispanics increased nearly 40 percent between 1996 and 2005, compared to an increase of 34 percent in the non-Hispanic population.

By primary diagnosis, adjusted rates of diabetes remain high but appear to be leveling off, as evidenced by more moderate growth beginning in 2000 (Figure 2.30). Rates of diabetes between 1995 and 2000, for example, increased 39 percent. Rates between 2000 and 2005, in contrast, grew by less than half that, at 15.6 percent. In 2005, rates of diabetes stood at 578 per million population compared to rates for hypertension, glomerulonephritis, and cystic kidney disease, at 382.7, 254.4, and 73.3, respectively.

*All figures December 31 point prevalent ESRD patients.*

**Figure 2.27** Geographic variations in adjusted prevalent rates (per million population), by HSA December 31 point prevalent patients

**Figure 2.28** Prevalent counts & adjusted rates, by race December 31 point prevalent patients

**Figure 2.29** Prevalent counts & adjusted rates, by Hispanic ethnicity December 31 point prevalent patients

**Figure 2.30** Prevalent counts & adjusted rates, by primary diagnosis December 31 point prevalent patients

In published papers the USRDS has used two methods to project future ESRD counts, one with available data through 1997 and projecting to 2010 (Xue et al.), and one with available data through 2000 and projecting to 2015 (Gilbertson et al.). The first method used a forecasting methodology with a stepwise autoregressive technique and exponential smoothing, while the second was based on a Markov model. Here we revisit both methods, using data available through 2005, and projecting to 2020.

Figures 2.31 and 2.36 compare newly projected incident counts to original projections, using the autoregression and Markov models, respectively. The original autoregression projection consisted of a conservative, more linear projection (in Figure 2.31, Model 1) and a less conservative, quadratic projection (Model 2). Both overestimated actual counts in 2005, with the more conservative projection doing so by approximately 21 percent. The updated projection, using data through 2005, produces an estimate of 143,693, similar to the 150,772 obtained in Figure 2.36 with the Markov model. The new autoregression projection produces a lower estimates for 2010 than did our previous projection. This is primarily a result of a slowing of the growth in incident counts from 2000 to 2005, itself due to continued flattening of the incident rates. This decreased growth in terms of patient counts, however, is not expected to continue, as the effect of the baby boomers, of changing patient distribution by race and ethnicity, and of a continued rise in the prevalence of diabetes will drive future increases in ESRD counts, even if there is no further growth in rates of ESRD.

Figures 2.32 and 2.37 show projected prevalent ESRD counts using the autoregression and Markov models. Similar to those of incident counts, the new projections give slightly lower estimates for 2010 than did our previous estimates. Both models project approximately 785,000 prevalent ESRD patients by 2020.

In Figure 2.33 we project total Medicare ESRD costs to 2020 (this estimate is not adjusted for inflation). With actual costs in 2005 of $21.3 billion, continued growth in ESRD counts—both prevalent and incident—is expected to double these expenditures through 2019, with costs of $53.6 billion in 2020.

Projected prevalent counts for the dialysis and transplant populations are shown in Figures 2.34–35 and 2.38. While new immunosuppressive drugs, improved surgical techniques, and improved post-transplant care during the past decade...
have enabled transplantation of older patients and of those with a higher burden of comorbidity, transplanted patients still currently account for just 30 percent of the prevalent ESRD population, primarily due to organ availability. The Markov model assumes a similar distribution, with this 30 percent growing just slightly by 2020, while the autoregression model makes no such assumption and separately extrapolates actual dialysis and transplant counts. These methods lead to somewhat different projections: for dialysis, the Markov model estimates 533,800 patients by 2020, and the autoregression model 525,885. For transplant, projected counts are 250,813 and 257,927, respectively. Autoregression estimates suggest that 33 percent of prevalent ESRD patients in 2020 will have a transplant, and 67 percent will be treated with dialysis.

Projected incident and prevalent counts by race and primary cause of renal failure are shown in Figures 2.39–40. By race, we project that the largest percent change between 2005 and 2020 will be among patients of races other than white or African American. In the prevalent population, for example, counts of white and African American patients are estimated to grow 64 and 48 percent, while the number of patients of other races is expected to more than double—from 35,330 in 2005 to 71,256 in 2020.

By primary cause of renal failure, continued expected growth in the prevalence of diabetes should lead to a further rise in diabetic renal failure. We project that patients with ESRD caused by diabetes will account for 47 percent of the incident ESRD population, and 37 percent of the prevalent population, by 2020.

Figure 2.33–34 & Figure 2.35–36 counts projected using forecasting & time series analysis. Original projection uses two models with data from 1982 through 1997; new projection uses data from 1998 through 2005. Figure 2.33 dollars projected using forecasting & time series analysis. Original projection uses data from 1982 through 1997; new projection uses data from 1998 through 2005. Figure 2.34–40 counts projected using a Markov model. Original projection uses data through 2000; new projection uses data through 2005.
On this spread we present data on the incidence and prevalence of ESRD due to some of the less frequently occurring primary diagnoses. In 2004–2005, the incidence of ESRD caused by Fabry’s disease—a lipid storage disorder—was 0.9 per million population, and the prevalence rose slightly to 0.5 (Figure 2.41).

The incidence of ESRD due to IgA nephropathy/Berger’s disease or to IgM nephropathy was stable during the late 1990s and early part of this decade, then rose slightly in 2004–2005, reaching 3.2 cases per million population (Figure 2.42). Prevalence, in contrast, has grown steadily since 1996–1997, reaching 22.1 in 2004–2005, and indicating that people are surviving longer with these diagnoses.

Rates of ESRD caused by Wegener’s granulomatosis show a similar pattern of change (Figure 2.43). After stabilizing between 1998 and 2003, incidence rose in 2004–2005 to 1.0 per million population. Prevalence has risen steadily since 1996–1997, reaching 4.6 in 2004–2005—a growth of 70 percent.

Systemic lupus erythematosus (SLE) is an autoimmune disease in which the body produces antibodies to its own proteins. The incidence of ESRD due to this disease has remained between 3.4 and 3.8 per million population since 1996–1997, while prevalence has grown 46.9 percent, reaching 28.4 in 2004–2005 (Figure 2.44).

The rate of new cases of ESRD caused by secondary glomerulonephritis/vasculitis other than Wegener’s or SLE nephritis—a designation that includes scleroderma, hemolytic uremic syndrome, and nephropathy due to heroin or other drug abuse—has fallen very slightly, and is now 2.9 per million population (Figure 2.45). Prevalence has grown from 13.5 in 1996–1997 to 16.4 in 2004–2005.

Polycystic kidney disease is an inherited disorder marked by numerous cysts in the kidney, and usually appears later in life. Incidence of ESRD due to PKD has been steady since the mid-1990s, at 7.4–8.0 per million population, while prevalence has increased from 58.8 to 71.1 cases per million population—growth of 20.8 percent (Figure 2.46).

The incidence of ESRD caused by Alport’s disease—also an inherited condition, marked by deafness and hematuria as well as kidney damage—and by other hereditary and familial diseases remains between 0.5–0.6 per million population, while prevalence grew slightly to reach 6.8 in 2004–2005 (Figure 2.47).

For ESRD due to multiple myeloma or light chain nephropathy, rates of incidence and prevalence show a similar pattern—peaking in 2002–2003 at 4.7 and 5.9 per million population, respectively, then falling slightly in the following two-year period (Figure 2.48).

New ESRD due to amyloidosis—in which insoluble proteins accumulate in the tissues and organs—has remained stable at 0.9 per million population since 2000, while prevalence has risen slightly from 2.0 in 1996–1997 to 2.2 in 2004–2005 (Figure 2.49).

While the rate of new cases of ESRD due to AIDS has fallen slightly since the beginning of the decade—reaching 2.7 per million population in the 2004–2005 period—prevalence has grown steadily, reaching 8.9 in 2004–2005, and indicating that people are living longer with the disease (Figure 2.50).

New cases of ESRD due to complications from a transplant seem to have spiked in 2004–2005, to 0.9 per million population; this growth may, however, be attributed to new codes on the revised Medical Evidence form that are related to post-transplant complications (Figure 2.51). Prevalence of ESRD from these complications reached 3.8 in 2004–2005.
Rates of ESRD due to AIDS
incident & December 31 point prevalent ESRD patients

Rates of ESRD due to lupus erythematosus (SLE nephritis)
incident & December 31 point prevalent ESRD patients

Rates of ESRD due to polycystic kidney disease
incident & December 31 point prevalent ESRD patients

Rates of ESRD due to multiple myeloma & light chain
nephropathy incident & December 31 point prevalent ESRD patients

Rates of ESRD due to amyloidosis
incident & December 31 point prevalent ESRD patients

Rates of ESRD due to post-transplant (non-renal) complications
incident & December 31 point prevalent ESRD patients
Between 1995 and 2005, the number of new patients with diabetes as the cause of ESRD grew nearly 60 percent, and the rate per million in 2005 reached 151.9 (Figure 2.52). Network 1 exhibited the lowest rate of growth in new cases, at 33.6 percent, and Network 14 the highest, at 79.9 percent. Rates of diabetic ESRD range from 94.4 per million population in Network 16 to nearly 190 in Network 14—25 percent higher than the rate for all networks combined. Rates exceeding 170 per million population are evident in Networks 5, 6, 8, 9, and 13.

The number of new ESRD cases attributed to hypertension grew 52 percent in 2005, while the rate per million population was 61 percent lower than that of diabetic ESRD (Figure 2.53). Network 15 shows the most significant growth in the number of new cases—91.7 percent—compared to 30.6 percent in Network 2. The rate is highest in Network 8, at more than 140 per million population, and lowest in Network 16, at 47.6. Rates exceeding 120 are evident in Networks 5, 6, and 13.

New cases of ESRD caused by glomerulonephritis fell 2.3 percent overall in 2005 (Figure 2.54). Ten-year change varies widely among networks, from a rise of 23.2 percent in Network 15 to a decrease of 21.8 in Network 10. Rates per million population vary less than rates of ESRD due to diabetes or hypertension, from a high of 32.7 in Network 3 to a low of 20.8 in Network 16. In Network 16, the 3.0 percent growth in 2005 is significantly less than growth rates of 58.7 and 71.6 percent, respectively, found in patients with diabetes or hypertension.

Mean age is greatest across the northern half of the country and Florida (Figure 2.55). From the lower to the upper quintiles, mean age varies from 59.8 to 66.3 and 56.4 to 59.8, respectively, among incident and prevalent patients.

Tables 2.c–e present adjusted patient demographics and disease rates by modality in 2005. Rates per million for incident dialysis patients range from 221 in Network 16 to 413 in Network 8. In 11 of 18 networks the rate exceeds that of the overall population.
In the point prevalent dialysis population, rates per million range from 680 in Network 16 to 1,390 in Network 8 and 1,428 in Network 6. African Americans tend to constitute a large proportion of the patient population in networks with the highest point prevalence.

Transplant rates are highest in Network 11, at 713 per million population. Network 5, representing the Upper Midwest, accounted for 11.2 percent of the total transplants performed in 2007.

Network 256

ESRD networks

Network 1 Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Network 2 New York
Network 3 New Jersey, Puerto Rico, Virgin Islands
Network 4 Delaware, Pennsylvania
Network 5 Maryland, Virginia, Washington D.C., West Virginia
Network 6 Georgia, North Carolina, South Carolina
Network 7 Florida
Network 8 Alabama, Mississippi, Tennessee
Network 9 Indiana, Kentucky, Ohio
Network 10 Illinois
Network 11 Michigan, Minnesota, North Dakota, South Dakota, Wisconsin
Network 12 Iowa, Kansas, Missouri, Nebraska
Network 13 Arkansas, Louisiana, Oklahoma
Network 14 Texas
Network 15 Arizona, Colorado, Nevada, New Mexico, Utah, Wyoming
Network 16 Alaska, Idaho, Montana, Oregon, Washington
Network 17 American Samoa, Northern California, Guam, Hawaii
Network 18 Southern California

Network demographics & adjusted rates, by network: incident dialysis patients, 2005

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<th>Network</th>
<th>Total patients</th>
<th>% of total</th>
<th>Rate per million</th>
<th>Mean age</th>
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<th>% White</th>
<th>% Af Am</th>
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Figure 2.55: incident ESRD patients; rates adjusted for age, gender, & race. Figure 2.55: December 31 point prevalent ESRD patients, 2005, by HSA, unadjusted. Excludes patients residing in Puerto Rico & the Territories. Table 2.6: December 31 point prevalent dialysis patients. Table 2.7: December 31 point prevalent dialysis patients. * Values for cells with ten or fewer patients are suppressed. Table 2.8: December 31 point prevalent transplant patients. ** Tables 2.9c-2.9j counts & percentages include all patients in each network; rates, however, are calculated for the U.S. population, only & exclude patients with unknown age, gender, race, or network. Rates adjusted for age, gender, & race. A list of network contacts can be found on page 258 of Appendix A.
incidence

In 2005, the overall adjusted incidence of ESRD again remained stable, with the rate of 347 per million population only 1 percent higher than in 2001. Racial disparities in the incidence of ESRD continue to be dramatic. Incident rates in 2005 ranged from 268 per million population among whites to 991 among African Americans, 516 among Native Americans, and 355 among Asians—3.7, 1.9, and 1.3 times greater, respectively. The 2005 incident rate for Hispanic patients was 490 per million population, 1.5 times higher than that found among whites.

incident rates of ESRD based on at-risk populations

Based on data collected through surveillance programs, the incidence of diabetes in the United States has risen to 5.3 per 100 population, with the major growth occurring in those age 45 years and older. Using the CDC diabetic data, it appears that ESRD due to diabetes has been declining since the mid-1990s. Data reported by the USRDS, in contrast, show the rate stabilizing in most populations over the last five years. With each method, however, the most important general finding centers on the slowing of rates of ESRD due to diabetes, which may reflect improved preventive care.

ESRD rates in high-density areas

Incident rates by Metropolitan Statistical Area for whites exceed 300 per million population in the Los Angeles, Riverside-San Bernardino (California), and Houston areas, while the lowest rates are found in patients living in the Tampa-St. Petersburg area, at 199 per million. Geographic patterns show that incident rates for whites are highest in areas of the Southwest, south Texas, and portions of the Ohio Valley, and average 381 per million population for patients residing in areas represented by the upper quintile. Rates for African Americans are nearly three times those found in whites, and are highest in the south, mid-south, and along the Eastern Seaboard.

prevalence

The adjusted prevalence of ESRD reached 1,569 per million population in 2005, 1.4 times higher than in 1995. Annual growth in the rate, however, has slowed, and has been 3.0 percent or lower since 2001. The numbers of patients age 45–64 and age 75 and older have grown 32 percent since 2000; the population age 20–44, in contrast, seems to have plateaued, increasing only 5 percent during the same period. Significant racial differences in ESRD prevalence persist, with the 2005 prevalent rates per million population of 4,863 and 2,669 for African Americans and Native Americans, respectively, being 4.2 and 2.3 times higher than the rate of 1,151 found among whites.

projections of counts & costs of ESRD

Updated projections of incident counts of ESRD through the year 2020, using the autoregression and Markov analytical models, show similar results of 143,693 and 150,722, respectively. Using the autoregression and Markov models, projected prevalent counts of ESRD through 2020 are approximately 785,000. Projected Medicare ESRD costs in 2020 are approximately $53.6 billion dollars.

rare diseases

The prevalence of ESRD due to IgA nephropathy/Berger’s disease or IgM nephropathy has grown steadily since 1996–1997, reaching 22.1 per million population in 2004–2005, and indicating that people are surviving longer with the disease. The incidence of ESRD due to systemic lupus erythematosus has remained between 3.4 and 3.8 per million population since 1996–1997, while prevalence has grown 46.9 percent, reaching 28.4 in 2004–2005.

ESRD network populations

Rates of diabetic ESRD per million population range from 94.4 in Network 16 to nearly 190 in Network 14—25 percent higher than the rate for all networks combined. The rate of new ESRD cases attributed to hypertension is highest in Network 8, at more than 140 per million population, and lowest in Network 16, at 47.6. Rates per million population of ESRD caused by glomerulonephritis vary less than rates of ESRD due to diabetes or hypertension, from a high of 32.5 in Network 4 to a low of 20.8 in Network 14. By network, transplant rates are highest in Network 11, at 715 per million population.

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.