

## Chapter 2: Healthy People 2020

- This year we examine data for ten HP 2020 Objectives, spanning 19 total indicators. As in previous ADRs, we present data overall and stratified by race, sex, and age groups.
- In 2013, 11 of 19 indicators met HP2020 goals, with most of the remaining objectives continuing to show improvement.
- This year, we introduce U.S. maps to illustrate geographic variation for some of the indicators. Specifically, we present state-level comparison maps for HP2020 objectives CKD-10 (proportion of ESRD patients receiving care from a nephrologist at least 12 months before the start of renal replacement therapy) and CKD-13.1 (proportion of patients receiving a kidney transplant within three years of end-stage renal disease).
- To update HP2020 objectives relating to vascular access, we present data from CROWNWeb for the first time. Previous USRDS annual reports have relied on data from the Clinical Performance Measures Project (CMS, 2007), which only collected new information through 2007. By employing CROWNWeb data, this year we were able to present more recent findings from 2012 and 2013 for HP2020 objectives CKD 11-1 (proportion of adult hemodialysis patients who use arteriovenous fistulas as the primary mode of vascular access) and CKD 11-2 (proportion of adult hemodialysis patients who use catheters as the only mode of vascular access).

### Introduction

For more than three decades, the Healthy People initiative has served as the nation’s agenda for health promotion and disease prevention. Coordinated by the United States (U.S.) Department of Health and Human Services, the initiative provides a vision and strategy for improving the health of all Americans by setting priorities, identifying baseline data and 10-year targets for specific objectives, monitoring outcomes, and evaluating progress. Since its inaugural iteration in 1980, in each decade the program has released updated plans that reflect emerging health priorities, and have helped to align health promotion resources, strategies, and research.

Healthy People 2020 (HP2020) was launched on December 2, 2010. It represents the fourth-generation plan, and encompasses more than 1,000 health objectives organized into 42 different topic areas. Built on the success of the three previous initiatives, HP2020 seeks to achieve the following overarching goals:

- to assist all Americans in attaining high-quality, longer lives free of preventable disease, disability, injury, and premature death;

- to achieve health equity, eliminate disparities, and improve the health of all groups;
- to create social and physical environments that promote good health for all, and
- to promote quality of life, healthy development, and healthy behaviors across all life stages (HP2020, 2010).

One of the key priorities of the HP2020 initiative is to “reduce new cases of chronic kidney disease (CKD) and its complications, disability, death, and economic costs.” The development of CKD and its progression to end-stage renal disease (ESRD) is a major source of reduced quality of life in the U.S., and is responsible for significant premature mortality. The HP2020 CKD objectives are designed to reduce the long-term burden of kidney disease, increase lifespan, and improve quality of life among those with this condition, and to eliminate health care disparities among patients. To accomplish these goals the HP2020 program developed 14 objectives (with 24 total indicators) related to CKD, accompanied by targets designed to evaluate the program’s success. Herein, we provide data for nine of these objectives, as well as information on urine albumin testing in

non-CKD patients diagnosed with diabetes mellitus (DM; 19 total indicators). Because we use the Medicare 5 percent data sample to evaluate objectives related to CKD patients who are not on dialysis, the results presented in this chapter are limited to those aged 65 and older.

Overall, the data continue to demonstrate both areas of improvement and of continued need. Encouraging trends were noted for nearly all objectives, with 11 out of 19 indicators meeting or exceeding their improvement targets. For example, with respect to provision of recommended care, both of the indicators related to the proportion of patients with DM and CKD receiving recommended medical evaluations have surpassed their objectives. Nearly all indicators related to reductions in mortality among ESRD patients have exceeded their targets. However, the data demonstrate that several indicators continue to fall short of their targets. The rates of new cases of ESRD (CKD Objective 8) and the rate of ESRD among patients with DM (CKD Objective 9.1) remain above target, but have continued to slowly trend downwards in both cases. Similarly, transplant wait-listing of dialysis patients (CKD Objective 12) and death rate among patients with a functioning kidney transplant (CKD Objective 14.4) have both improved, but both remain short of their HP2020 goals. The proportion of patients receiving a kidney transplant within three years of ESRD is one of the only objectives that has not improved; in 2000, 19.1% of patients met this objective, nearly meeting the target of 19.7%; by 2010 only 14.1% of patients met this objective.

It is important to highlight that one of the four overarching goals of HP2020 is to eliminate health care disparities. While much of the data show promising trends relevant to this goal, progress overall has not always translated into reduced differences across subgroups. To facilitate comparisons, data is presented overall and by racial, ethnic, sex, and age subgroups. In many cases, while an objective may be met by the overall population, one or more subgroups may fall well short. Primarily, however, trends are similar across different subgroups.

In this 2015 report, for the first time we have included maps to illustrate U.S. geographic differences in the achievement of two HP2020 objectives: the proportion

of CKD patients receiving nephrology care for 12 months before starting renal replacement therapy (CKD Objective 10) and the proportion of patients receiving a kidney transplant within three years of ESRD (CKD Objective 13.1).

Below, the detailed findings and trends for each of the 10 objectives (with 19 total indicators) are presented separately. Additional information on the HP2020 program objectives can be found at [www.healthypeople.gov](http://www.healthypeople.gov).

### **ANALYTICAL METHODS**

See the ESRD Analytical Methods chapter for an explanation of analytical methods used to generate the figures and tables in this chapter.

### **Recommended Care**

Acute kidney injury (AKI) is now recognized as an important risk factor for the subsequent development of CKD. The HP2020 program has been at the forefront of recognizing this risk, and this objective aims to promote improved renal follow-up after an episode of AKI. Post-AKI follow-up allows for early identification of development of CKD, and provides an opportunity to institute renoprotective measures early in the course of evolving disease. Over the past decade, the percentage of Medicare patients with AKI receiving follow-up renal evaluation has risen by greater than threefold, but the absolute levels remain low overall. In 2013, 16.1% of patients aged 65 and older who were hospitalized for AKI had a follow-up renal evaluation during the next six months (see Table 2.1). This is the third consecutive year that the HP2020 goal of 12.2% has been achieved.

**vol 2 Table 2.1 HP2020 CKD-3 Increase the proportion of hospital patients who incurred acute kidney injury who have followup renal evaluation in 6 months post discharge: Target 12.2%**

|  | 2001 (%) | 2002 (%) | 2003 (%) | 2004 (%) | 2005 (%) | 2006 (%) | 2007 (%) | 2008 (%) | 2009 (%) | 2010 (%) | 2011 (%) | 2012 (%) | 2013 (%) |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>All</b>                             | 2.4      | 3.1      | 4.4      | 8.4      | 9.1      | 10.5     | 11.2     | 10.6     | 11.5     | 11.9     | 12.7     | 12.8     | 16.1     |
| <b>Race/Ethnicity</b>                  |          |          |          |          |          |          |          |          |          |          |          |          |          |
| American Indian or Alaskan Native only | 0.0      | 0.0      | 2.9      | 16.7     | 4.8      | 13.2     | 12.0     | 15.2     | 6.9      | 11.0     | 16.7     | 9.5      | 7.8      |
| Asian only                             | 3.8      | 2.0      | 4.5      | 8.1      | 12.8     | 19.0     | 15.2     | 11.5     | 16.6     | 15.5     | 16.0     | 14.8     | 22.0     |
| Black or African American only         | 2.9      | 2.5      | 4.0      | 7.8      | 9.7      | 9.2      | 11.2     | 10.3     | 12.1     | 11.3     | 12.1     | 13.3     | 16.2     |
| White only                             | 2.3      | 3.2      | 4.5      | 8.3      | 8.8      | 10.5     | 11.1     | 10.4     | 11.2     | 11.9     | 12.6     | 12.6     | 15.7     |
| Hispanic or Latino                     | 1.4      | 6.6      | 7.1      | 12.9     | 12.2     | 10.3     | 12.4     | 15.6     | 13.4     | 13.1     | 17.2     | 16.4     | 23.0     |
| <b>Sex</b>                             |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Male                                   | 2.8      | 3.5      | 4.6      | 8.8      | 9.9      | 11.3     | 12.6     | 11.9     | 12.5     | 12.8     | 13.9     | 13.9     | 17.6     |
| Female                                 | 2.0      | 2.8      | 4.3      | 8.0      | 8.3      | 9.7      | 10.0     | 9.4      | 10.6     | 11.1     | 11.7     | 11.9     | 14.7     |
| <b>Age</b>                             |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 65-74                                  | 3.7      | 4.2      | 6.2      | 11.6     | 12.8     | 14.7     | 16.1     | 14.8     | 16.0     | 16.5     | 17.6     | 17.3     | 21.0     |
| 75-84                                  | 2.0      | 3.2      | 4.2      | 8.5      | 8.6      | 10.4     | 11.1     | 10.8     | 11.3     | 12.4     | 13.2     | 13.0     | 16.8     |
| 85+                                    | 0.8      | 1.1      | 2.2      | 3.1      | 4.4      | 5.1      | 5.1      | 5.0      | 6.4      | 5.9      | 6.2      | 6.9      | 9.1      |

Data Source: Special analyses, Medicare 5 percent sample. Medicare patients aged 65 & older with a hospitalized AKI event in a given year. Abbreviation: CKD, chronic kidney disease.

The proportion of patients receiving post-AKI renal evaluation decreased with older age. Among patients aged 65-74, 21.0% received follow-up evaluation. This declined to 16.8% in patients aged 75-84, and only 9.1% of those aged 85 and older received such care. In addition, men were more likely to receive follow-up renal evaluation as compared with women. A slightly higher proportion of Blacks/African Americans had post-AKI follow-up compared to Whites, at 16.2% and 15.7% respectively.

Over the past decade, there has been steady annual improvement in the proportion of patients with diagnosed diabetes who received an annual urine albumin measurement. In 2013, this proportion reached 45.0%, representing a greater than twofold increase from 2003. This is the fifth consecutive year that the HP2020 target of 37.0% has been achieved (see Table 2.2).

**vol 2 Table 2.2 HP2020 D-12 Increase the proportion of persons with diagnosed diabetes who obtain an annual urinary microalbumin measurement: Target 37.0%**

|  | 2001 (%) | 2002 (%) | 2003 (%) | 2004 (%) | 2005 (%) | 2006 (%) | 2007 (%) | 2008 (%) | 2009 (%) | 2010 (%) | 2011 (%) | 2012 (%) | 2013 (%) |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>All</b>                             | 15.3     | 18.1     | 21.2     | 25.5     | 28.5     | 31.0     | 33.3     | 35.3     | 36.9     | 38.6     | 40.5     | 42.3     | 45.0     |
| <b>Race/Ethnicity</b>                  |          |          |          |          |          |          |          |          |          |          |          |          |          |
| American Indian or Alaskan Native only | 11.4     | 12.0     | 13.0     | 15.5     | 18.9     | 20.2     | 20.9     | 21.2     | 24.0     | 22.9     | 24.5     | 24.0     | 27.2     |
| Asian only                             | 16.8     | 20.6     | 23.9     | 28.8     | 30.5     | 33.4     | 34.9     | 37.3     | 39.5     | 41.7     | 43.8     | 47.3     | 49.4     |
| Black or African American only         | 13.1     | 15.6     | 18.5     | 23.5     | 26.4     | 29.0     | 31.5     | 33.3     | 35.3     | 36.9     | 39.0     | 40.5     | 43.1     |
| White only                             | 15.5     | 18.5     | 21.6     | 25.7     | 28.7     | 31.2     | 33.5     | 35.5     | 37.1     | 38.7     | 40.6     | 42.3     | 44.9     |
| Hispanic or Latino                     | 15.3     | 17.8     | 20.7     | 25.5     | 29.6     | 31.3     | 33.2     | 35.2     | 37.6     | 40.2     | 42.3     | 44.3     | 47.9     |
| <b>Sex</b>                             |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Male                                   | 14.8     | 17.6     | 20.7     | 24.7     | 27.8     | 30.2     | 32.4     | 34.4     | 36.2     | 37.7     | 39.6     | 41.5     | 44.0     |
| Female                                 | 15.9     | 18.8     | 21.9     | 26.5     | 29.4     | 32.0     | 34.5     | 36.4     | 37.9     | 39.5     | 41.6     | 43.3     | 46.1     |
| <b>Age</b>                             |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 65-74                                  | 18.1     | 21.2     | 24.7     | 29.4     | 32.6     | 35.1     | 37.7     | 39.9     | 41.8     | 43.3     | 45.3     | 47.2     | 49.7     |
| 75-84                                  | 13.7     | 16.7     | 19.6     | 23.8     | 26.8     | 29.6     | 31.8     | 33.7     | 35.3     | 37.1     | 39.1     | 41.0     | 44.4     |
| 85+                                    | 7.2      | 9.0      | 10.9     | 13.9     | 16.1     | 18.1     | 20.5     | 22.2     | 23.5     | 25.0     | 26.7     | 28.0     | 31.5     |

Data Source: Special analyses, Medicare 5 percent sample. Medicare patients with diabetes mellitus, aged 65 & older. Abbreviations: D, diabetes mellitus.

The proportion of patients with diabetes who had urine albumin measurements declined with age, falling from 49.7% in the 65-74 age group to 31.5% in patients older than 85 years. Proportions were relatively similar when examined by race, with the exception of Native Americans. While this group had a low rate of 27.2%, testing in Native Americans may have been under-reported because the Indian Health Service does not report claims through the Medicare system.

HP2020 CKD Objective 4.1 examines the proportion of patients with CKD who receive recommended medical

testing, including serum creatinine, urine albumin, and lipids. Table 2.3 shows that in the Medicare population aged 65 and older, 33.1% of CKD patients underwent serum creatinine, lipid, and urine albumin testing in 2013, surpassing the HP2020 goal of 28.3% for the fourth consecutive year. Overall, this continues an improving trend and represents a greater than threefold increase over the past decade. As seen with other measures of recommended testing, the proportion of patients tested declined with rising age; testing occurred in 41.5, 33.7, and 18.6% of individuals in the 65-74, 75-84, and 85 years and older age groups, respectively.

**vol 2 Table 2.3 HP2020 CKD-4.1 Increase the proportion of persons with chronic kidney disease who receive medical evaluation with serum creatinine, lipids, and microalbuminuria: Target 28.3%**

|  | 2001 (%) | 2002 (%) | 2003 (%) | 2004 (%) | 2005 (%) | 2006 (%) | 2007 (%) | 2008 (%) | 2009 (%) | 2010 (%) | 2011 (%) | 2012 (%) | 2013 (%) |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>All</b>                             | 7.3      | 9.1      | 10.6     | 19.8     | 22.1     | 23.4     | 25.7     | 26.7     | 28.1     | 29.0     | 30.2     | 31.1     | 33.1     |
| <b>Race/Ethnicity</b>                  |          |          |          |          |          |          |          |          |          |          |          |          |          |
| American Indian or Alaskan Native only | 8.2      | 5.5      | 7.0      | 13.7     | 19.2     | 15.8     | 16.9     | 16.7     | 18.3     | 20.2     | 21.0     | 18.4     | 23.4     |
| Asian only                             | 8.4      | 14.4     | 14.1     | 27.6     | 27.9     | 32.5     | 35.3     | 34.0     | 37.5     | 36.9     | 39.5     | 41.2     | 43.9     |
| Black or African American only         | 6.6      | 8.7      | 10.1     | 20.8     | 22.8     | 24.4     | 26.7     | 27.8     | 30.1     | 30.6     | 32.3     | 33.1     | 35.0     |
| White only                             | 7.1      | 8.8      | 10.4     | 19.3     | 21.6     | 22.9     | 25.1     | 26.3     | 27.4     | 28.3     | 29.4     | 30.3     | 32.2     |
| Hispanic or Latino                     | 13.1     | 17.3     | 17.7     | 26.8     | 30.4     | 31.1     | 33.1     | 32.1     | 36.1     | 36.7     | 38.9     | 41.2     | 44.2     |
| <b>Sex</b>                             |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Male                                   | 7.0      | 8.9      | 10.0     | 18.6     | 20.9     | 22.4     | 24.4     | 25.2     | 26.7     | 27.6     | 28.6     | 29.5     | 31.4     |
| Female                                 | 7.5      | 9.3      | 11.3     | 21.1     | 23.4     | 24.5     | 27.1     | 28.4     | 29.6     | 30.6     | 32.0     | 33.0     | 35.1     |
| <b>Age</b>                             |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 65-74                                  | 10.3     | 12.6     | 14.2     | 26.1     | 29.2     | 31.4     | 33.9     | 35.1     | 36.7     | 37.6     | 38.9     | 39.9     | 41.5     |
| 75-84                                  | 6.2      | 8.0      | 9.8      | 18.5     | 20.8     | 22.6     | 24.9     | 26.2     | 27.7     | 28.9     | 30.3     | 31.2     | 33.7     |
| 85+                                    | 2.3      | 3.1      | 4.0      | 8.2      | 10.0     | 10.1     | 12.1     | 13.1     | 14.0     | 14.8     | 16.2     | 17.0     | 18.6     |

Data Source: Special analyses, Medicare 5 percent sample. Medicare patients aged 65 & older with CKD. Abbreviations: CKD, chronic kidney disease.

Patients with both type 1 or type 2 diabetes and CKD require comprehensive laboratory monitoring to assess for development of complications. The glycosylated hemoglobin (HgbA1c) test provides an assessment of blood glucose control over prolonged periods of time, while diabetic retinopathy can be detected through regular eye examinations. In the diabetic CKD population aged 65 and older, 29.9% of patients received serum creatinine, urine albumin, HgbA1c,

and lipid testing, as well as an eye examination in 2013 (see Table 2.4). This again exceeded the HP2020 goal of 25.3%, although some populations remained below the goal (e.g. Native Americans, patients aged 85 years and older). Again, data for Native Americans may have been under-reported due to the separation of the Indian Health Services from Medicare reporting.

**vol 2 Table 2.4 HP2020 CKD-4.2 Increase the proportion of persons with type 1 or type 2 diabetes and chronic kidney disease who receive medical evaluation with serum creatinine, microalbuminuria, A1c, lipids, and eye examinations: Target 25.3%**

|  | 2001 (%) | 2002 (%) | 2003 (%) | 2004 (%) | 2005 (%) | 2006 (%) | 2007 (%) | 2008 (%) | 2009 (%) | 2010 (%) | 2011 (%) | 2012 (%) | 2013 (%) |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>All</b>                             | 9.0      | 10.4     | 12.1     | 18.4     | 20.0     | 21.1     | 23.0     | 23.7     | 25.1     | 26.5     | 26.9     | 27.6     | 29.9     |
| <b>Race/Ethnicity</b>                  |          |          |          |          |          |          |          |          |          |          |          |          |          |
| American Indian or Alaskan Native only | 7.3      | 2.4      | 5.7      | 5.6      | 15.8     | 12.5     | 10.2     | 10.9     | 10.9     | 15.1     | 14.2     | 11.2     | 16.3     |
| Asian only                             | 8.3      | 12.4     | 12.8     | 25.0     | 21.8     | 26.1     | 26.7     | 25.3     | 27.0     | 29.6     | 30.8     | 32.4     | 37.0     |
| Black or African American only         | 6.7      | 7.2      | 9.9      | 16.3     | 17.9     | 18.8     | 19.7     | 21.1     | 22.4     | 23.8     | 25.1     | 25.3     | 27.1     |
| White only                             | 9.4      | 11.0     | 12.5     | 18.6     | 20.3     | 21.4     | 23.4     | 24.2     | 25.6     | 27.0     | 27.1     | 27.9     | 30.0     |
| Hispanic or Latino                     | 10.4     | 11.8     | 11.8     | 20.5     | 20.2     | 19.8     | 22.2     | 21.7     | 24.6     | 24.0     | 26.5     | 25.2     | 29.8     |
| <b>Sex</b>                             |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Male                                   | 8.7      | 10.3     | 11.8     | 18.0     | 19.7     | 20.9     | 22.5     | 23.6     | 24.7     | 26.2     | 26.6     | 27.5     | 29.4     |
| Female                                 | 9.3      | 10.6     | 12.4     | 18.8     | 20.3     | 21.4     | 23.5     | 23.7     | 25.6     | 26.8     | 27.3     | 27.8     | 30.3     |
| <b>Age</b>                             |          |          |          |          |          |          |          |          |          |          |          |          |          |
| 65-74                                  | 10.9     | 12.3     | 14.3     | 22.0     | 23.4     | 24.6     | 26.6     | 27.2     | 28.5     | 30.0     | 30.1     | 30.7     | 32.7     |
| 75-84                                  | 8.1      | 9.9      | 11.6     | 16.9     | 18.9     | 20.7     | 22.6     | 23.3     | 25.2     | 26.7     | 27.4     | 28.4     | 30.8     |
| 85+                                    | 4.0      | 4.2      | 4.9      | 9.5      | 11.5     | 11.3     | 13.0     | 14.2     | 15.5     | 16.6     | 17.7     | 18.3     | 20.5     |

Data Source: Special analyses, Medicare 5 percent sample. Medicare patients aged 65 & older with CKD & diabetes mellitus. Abbreviations: CKD, chronic kidney disease; A1c, glycosylated hemoglobin.

### Incidence of End-stage Renal Disease

Since 2006, the rate of new cases of ESRD has been slowly declining, although at 354.5 new cases per million population it still remains above the target rate of 344.3. As shown in Table 2.5, the trend of wide variation in the rate of new ESRD cases by race continued to be observed. Rates were lowest among Whites (282.5 new cases per million) and Asians (325.0 new cases per million). Consistent with historical trends, higher rates were seen among Blacks (915.3 new cases per million) and Native Hawaiians/Pacific Islanders (2,523.9 new cases per million). However, whereas rates have been decreasing for Blacks, in the past two years we have seen increased rates among Native Hawaiians and Pacific Islanders. It should be noted that the extraordinarily high rates among

Native Hawaiians and Pacific Islanders may have been due in part to differential race reporting between the Census Bureau and the ESRD Medical Evidence Report forms (CMS 2728; ME) data collections. Although in the Census, one-half of Native Hawaiians and Pacific Islanders self-identified as of multiple race, in the ME, it was only seven percent. The rate of incident ESRD among Hispanics (515.4 per million) continued to be nearly 50% greater than among non-Hispanics (354.9 per million).

While overall rates have declined, a difference between sexes continued, with a rate of 448.0 cases per million population among men and 278.4 new cases per million among women. This gap has increased from 2001, when males had a rate 42% higher than females, to 2013, where males exhibited a 61% higher rate.

**vol 2 Table 2.5 HP2020 CKD-8 Reduce the rate of new cases of end-stage renal disease (ESRD): Target 344.3 new cases per million population**

|  | 2001   | 2002   | 2003   | 2004   | 2005   | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>All</b>   | 387.9  | 388.8  | 388.7  | 388.2  | 391.3  | 399.0  | 391.1  | 386.6  | 389.3  | 381.5  | 364.7  | 356.9  | 354.5  |
| <b>Race</b>  |        |        |        |        |        |        |        |        |        |        |        |        |        |
| American Indian or Alaskan Native only                 | 709.5  | 672.0  | 622.4  | 633.6  | 609.0  | 524.8  | 538.0  | 543.4  | 527.8  | 487.6  | 457.3  | 462.6  | 403.7  |
| Asian only   | 319.5  | 312.7  | 304.2  | 281.9  | 336.5  | 354.5  | 356.3  | 354.6  | 363.6  | 353.0  | 345.0  | 332.4  | 325.0  |
| Native Hawaiian or other Pacific Islander only~        | 3430.6 | 3547.7 | 3552.0 | 3716.5 | 2902.8 | 2830.5 | 2388.6 | 2175.3 | 2420.5 | 2578.2 | 2356.9 | 2465.1 | 2523.9 |
| Black or African American only                         | 1126.0 | 1134.1 | 1131.7 | 1093.8 | 1103.1 | 1113.9 | 1091.6 | 1072.7 | 1070.5 | 1031.1 | 989.1  | 939.6  | 915.3  |
| White only   | 292.0  | 293.3  | 293.3  | 298.0  | 301.8  | 311.6  | 306.0  | 303.3  | 306.6  | 303.2  | 289.9  | 284.4  | 282.5  |
| Two or more races                                      | .      | .      | .      | .      | .      | 146.6  | 149.9  | 158.2  | 145.1  | 140.8  | 113.3  | 17.1   | 3.8    |
| <b>Ethnicity</b>                                       |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Hispanic or Latino                                     | 632.9  | 643.2  | 640.9  | 618.4  | 603.5  | 604.2  | 589.6  | 586.4  | 583.5  | 576.7  | 563.9  | 528.0  | 515.4  |
| Not Hispanic or Latino                                 | 372.8  | 373.1  | 374.1  | 375.2  | 377.9  | 383.4  | 376.5  | 373.0  | 377.3  | 370.0  | 354.0  | 352.9  | 354.9  |
| Black or African American only, not Hispanic or Latino | 1143.9 | 1153.5 | 1152.0 | 1111.2 | 1122.6 | 1134.8 | 1114.3 | 1095.7 | 1093.6 | 1054.5 | 1011.0 | 962.9  | 939.9  |
| White only, not Hispanic or Latino                     | 268.9  | 268.1  | 268.2  | 274.2  | 276.2  | 281.9  | 276.2  | 272.5  | 275.3  | 270.9  | 256.7  | 254.4  | 253.4  |
| <b>Sex</b>   |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Male   | 463.7  | 470.2  | 469.3  | 477.3  | 483.6  | 494.4  | 486.7  | 483.8  | 488.3  | 480.1  | 459.6  | 448.9  | 448.0  |
| Female   | 327.1  | 323.9  | 324.8  | 317.1  | 317.7  | 322.4  | 314.9  | 309.0  | 310.0  | 302.2  | 287.7  | 282.2  | 278.4  |
| <b>Age</b>   |        |        |        |        |        |        |        |        |        |        |        |        |        |
| <b>&lt;18</b>  | 11.6   | 11.9   | 12.0   | 12.5   | 12.3   | 11.3   | 12.1   | 11.9   | 11.7   | 11.3   | 11.4   | 11.3   | 10.8   |
| 0-4  | 8.9    | 7.8    | 9.2    | 10.9   | 10.0   | 8.8    | 10.9   | 10.1   | 10.4   | 10.7   | 10.8   | 11.4   | 10.5   |
| 5-11   | 7.6    | 8.9    | 7.6    | 7.9    | 7.8    | 6.5    | 6.9    | 7.5    | 7.1    | 7.0    | 6.7    | 7.2    | 7.5    |
| 12-17  | 18.4   | 18.7   | 19.6   | 19.4   | 19.6   | 18.9   | 19.2   | 18.7   | 18.1   | 16.7   | 17.3   | 16.1   | 14.9   |
| <b>18-44</b>   | 112.5  | 111.8  | 110.8  | 112.0  | 116.9  | 120.8  | 119.2  | 118.4  | 121.8  | 118.1  | 114.5  | 112.6  | 113.0  |
| 18-24  | 43.6   | 41.9   | 41.9   | 39.4   | 41.9   | 43.3   | 42.4   | 41.0   | 40.1   | 39.0   | 39.2   | 35.6   | 36.3   |
| 25-44  | 136.6  | 136.3  | 134.9  | 137.4  | 143.2  | 147.9  | 146.1  | 145.5  | 150.4  | 145.8  | 140.8  | 139.5  | 139.9  |
| <b>45-64</b>   | 615.1  | 605.7  | 606.8  | 600.3  | 600.9  | 612.2  | 597.6  | 592.9  | 592.2  | 574.8  | 554.4  | 551.3  | 546.2  |
| 45-54  | 388.8  | 388.1  | 390.1  | 388.1  | 386.3  | 403.2  | 390.2  | 386.2  | 388.2  | 372.9  | 370.4  | 365.5  | 375.4  |
| 55-64  | 841.4  | 823.3  | 823.5  | 812.5  | 815.6  | 821.3  | 805.0  | 799.6  | 796.2  | 776.8  | 738.3  | 737.0  | 716.9  |
| <b>65+</b>   | 1580.1 | 1626.0 | 1614.8 | 1611.7 | 1628.7 | 1654.3 | 1622.4 | 1598.8 | 1608.2 | 1599.3 | 1517.8 | 1451.6 | 1438.7 |
| 65-74  | 1436.3 | 1426.7 | 1406.8 | 1397.6 | 1384.0 | 1413.2 | 1379.3 | 1351.7 | 1358.4 | 1351.8 | 1267.8 | 1230.7 | 1224.8 |
| 75-84  | 1756.0 | 1853.7 | 1843.7 | 1844.6 | 1889.8 | 1913.0 | 1876.8 | 1853.2 | 1864.0 | 1859.1 | 1783.0 | 1687.0 | 1674.4 |
| 85+  | 1259.2 | 1341.2 | 1406.0 | 1424.0 | 1463.6 | 1478.7 | 1508.6 | 1525.0 | 1547.8 | 1477.3 | 1365.0 | 1306.4 | 1221.2 |

Data Source: Special analyses, USRDS ESRD Database and CDC Bridged Race Intercensal Estimates Dataset, Incident ESRD patients. Rates adjusted for: overall, age/sex/race; rates by age adjusted for sex/race; rates by sex adjusted for age/race; rates by race/ethnicity adjusted for age/sex. Reference: 2012 patients. "." Zero values in this cell. "~Estimate shown is imprecise due to small sample size and may be unstable over time. Abbreviations: CDC, Centers for Disease Control and Prevention; CKD, chronic kidney disease; ESRD, end-stage renal disease.

## Kidney Failure Due to Diabetes

There continues to be a favorable, decreasing trend in the overall rate of kidney failure due to DM. As shown in Table 2.6, the rate fell by 11% over the past decade, from 174.4 per million population in 2003 to 155.9 per million in 2013. These rates varied widely by race, with Whites having the lowest rate, at 130.0 per million, compared with 392.7 per million among Blacks. However, while the trend over the past decade stayed relatively flat for Whites, rates among Blacks have

improved by 23%. As seen with overall ESRD incidence in the previous indicator (and with the same reporting caveats), Native Hawaiians and Pacific Islanders had the highest rate of kidney failure due to DM at 1626.3 per million. Males continued to have a higher rate of diabetic kidney failure than did females, at 190.5 compared with 126.6 per million population. While the overall rate remained short of the HP2020 goal of 154.6 per million, this target was achieved in some subgroups, including Whites, females, and patients aged 44 years and younger.

vol 2 Table 2.6 HP2020 CKD-9.1 Reduce kidney failure due to diabetes: Target 150.6 per million population

|  | 2001   | 2002   | 2003   | 2004   | 2005   | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   | 2012   | 2013   |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>All</b>   | 177.9  | 175.2  | 174.4  | 174.2  | 174.2  | 177.6  | 171.7  | 169.1  | 169.6  | 166.9  | 159.5  | 156.4  | 155.9  |
| <b>Race</b>  |        |        |        |        |        |        |        |        |        |        |        |        |        |
| American Indian or Alaskan Native only                 | 526.0  | 494.4  | 469.3  | 478.9  | 431.1  | 366.4  | 378.8  | 391.1  | 384.3  | 347.5  | 321.5  | 320.9  | 291.6  |
| Asian only   | 151.7  | 142.5  | 139.7  | 128.9  | 159.7  | 177.2  | 172.7  | 179.7  | 180.0  | 172.3  | 172.4  | 167.5  | 167.9  |
| Native Hawaiian or other Pacific Islander only~        | 2190.5 | 2000.1 | 2019.7 | 2256.4 | 1699.7 | 1729.3 | 1490.5 | 1309.2 | 1537.5 | 1618.0 | 1446.7 | 1480.8 | 1626.3 |
| Black or African American only                         | 525.9  | 520.2  | 511.2  | 496.4  | 497.1  | 502.9  | 478.5  | 474.2  | 471.4  | 456.9  | 435.4  | 407.2  | 392.7  |
| White only   | 133.3  | 132.0  | 132.2  | 134.2  | 135.1  | 139.6  | 136.3  | 134.0  | 135.0  | 134.4  | 129.1  | 128.8  | 130.0  |
| Two or more races                                      | .      | .      | .      | .      | .      | 74.7   | 80.8   | 78.6   | 77.1   | 69.4   | 58.2   | 7.8    | *      |
| <b>Ethnicity</b>                                       |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Hispanic or Latino                                     | 404.5  | 407.4  | 407.5  | 393.8  | 377.7  | 375.5  | 366.2  | 367.7  | 359.8  | 355.8  | 346.1  | 320.5  | 308.2  |
| Not Hispanic or Latino                                 | 164.7  | 161.9  | 161.3  | 162.1  | 162.0  | 164.4  | 158.9  | 156.5  | 157.8  | 155.2  | 148.1  | 146.4  | 146.8  |
| Black or African American only, not Hispanic or Latino | 533.8  | 528.2  | 518.7  | 503.3  | 504.9  | 510.5  | 487.0  | 482.7  | 480.4  | 465.6  | 443.4  | 416.6  | 402.3  |
| White only, not Hispanic or Latino                     | 114.8  | 112.5  | 112.2  | 114.6  | 114.6  | 116.7  | 113.2  | 109.5  | 110.4  | 109.2  | 103.5  | 105.0  | 107.0  |
| <b>Sex</b>   |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Male   | 194.2  | 195.1  | 195.0  | 200.5  | 202.0  | 206.9  | 202.3  | 200.9  | 203.1  | 200.7  | 193.1  | 189.3  | 190.5  |
| Female   | 163.9  | 158.4  | 157.1  | 152.1  | 150.9  | 152.8  | 146.1  | 142.5  | 141.5  | 138.4  | 131.2  | 128.3  | 126.6  |
| <b>Age</b>   |        |        |        |        |        |        |        |        |        |        |        |        |        |
| <b>&lt;18</b>  | 0.1    | 0.1    | *      | 0.1    | 0.1    | *      | *      | *      | 0.1    | 0.1    | *      | 0.1    | 0.1    |
| 0-4  | *      | *      | *      | *      | *      | *      | *      | *      | *      | *      | *      | *      | *      |
| 5-11   | .      | *      | .      | .      | *      | .      | .      | *      | .      | .      | .      | *      | .      |
| 12-17  | *      | *      | *      | *      | 0.2    | *      | *      | *      | *      | *      | *      | *      | *      |
| <b>18-44</b>   | 33.6   | 32.7   | 33.4   | 34.4   | 35.2   | 38.4   | 37.9   | 37.6   | 40.0   | 39.6   | 39.7   | 37.7   | 38.6   |
| 18-24  | 3.6    | 2.9    | 2.9    | 2.1    | 3.1    | 3.1    | 2.7    | 2.4    | 2.6    | 2.5    | 2.3    | 2.5    | 2.4    |
| 25-44  | 44.1   | 43.1   | 44.0   | 45.7   | 46.4   | 50.7   | 50.2   | 49.9   | 53.1   | 52.6   | 52.8   | 50.1   | 51.2   |
| <b>45-64</b>   | 343.7  | 333.7  | 329.4  | 323.9  | 323.2  | 324.0  | 310.5  | 308.8  | 306.9  | 295.2  | 281.1  | 281.3  | 275.1  |
| 45-54  | 190.9  | 188.8  | 187.2  | 185.1  | 183.0  | 189.7  | 179.2  | 178.9  | 180.2  | 175.6  | 173.1  | 173.8  | 178.4  |
| 55-64  | 496.6  | 478.7  | 471.7  | 462.6  | 463.4  | 458.3  | 441.7  | 438.7  | 433.7  | 414.9  | 389.1  | 388.8  | 371.8  |
| <b>65+</b>   | 678.5  | 689.8  | 683.1  | 690.0  | 693.8  | 706.7  | 691.2  | 674.4  | 673.7  | 679.2  | 646.5  | 611.6  | 616.6  |
| 65-74  | 748.3  | 736.3  | 728.5  | 721.6  | 711.2  | 725.9  | 698.5  | 678.5  | 675.4  | 669.0  | 631.1  | 608.6  | 608.0  |
| 75-84  | 649.1  | 682.5  | 674.3  | 692.8  | 712.8  | 722.2  | 716.4  | 699.9  | 700.4  | 719.1  | 690.7  | 641.0  | 654.1  |
| 85+  | 274.5  | 297.8  | 317.8  | 344.5  | 328.8  | 359.1  | 366.7  | 378.6  | 389.5  | 383.2  | 358.3  | 348.2  | 327.0  |

Data Source: Special analyses, USRDS ESRD Database and CDC Bridged Race Intercensal Estimates Dataset, Incident ESRD patients. Adjusted for age/sex/race; reference: 2012. " Zero values in this cell. \*Values for cells with 10 or fewer patients are suppressed. ~Estimate shown is imprecise due to small sample size and may be unstable over time. Abbreviations: CDC, Centers for Disease Control and Prevention; CKD, chronic kidney disease; ESRD, end-stage renal disease.

In 2013, the adjusted rate of kidney failure due to DM among diabetic patients fell to 2,073 per million population, a 7.5% decrease from 2012 and a 20.8% decrease from 2007 (see Table 2.7). This rate fell below the HP2020 target of 2,380.5 for the fourth consecutive year. Rates varied among races, and remained highest in Black diabetics, at 3,181 per million in 2013; however, this reflected a 28.9% improvement from 2007, exceeded only by the 30.7% improvement seen in Native Americans. Male diabetics remained at higher risk for kidney failure as compared with females; in 2013, the rate in males fell below the HP2020 target for the first time.

vol 2 Table 2.7 HP2020 CKD-9.2 Reduce kidney failure due to diabetes among persons with diabetes: Target 2,380.5 per million population

|  | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|------|------|------|------|------|------|------|
| <b>All</b>   | 2616 | 2486 | 2401 | 2344 | 2271 | 2242 | 2073 |
| <b>Race</b>  |      |      |      |      |      |      |      |
| American Indian or Alaskan Native only                 | 2559 | 2926 | 2931 | 2594 | 2246 | 2273 | 1774 |
| Asian only   | 2067 | 2185 | 2207 | 2106 | 2070 | 2130 | 2079 |
| Native Hawaiian or other Pacific Islander only~        | .    | .    | .    | .    | .    | .    | .    |
| Black or African American only                         | 4476 | 4335 | 4242 | 3978 | 3820 | 3662 | 3181 |
| White only   | 2276 | 2138 | 2047 | 2025 | 1971 | 1965 | 1845 |
| Two or more races                                      | 610  | 553  | 517  | 484  | 463  | 59   | *    |
| <b>Ethnicity</b>                                       |      |      |      |      |      |      |      |
| Hispanic or Latino                                     | 3313 | 3177 | 2960 | 2898 | 2900 | 2770 | 2408 |
| Not Hispanic or Latino                                 | 2518 | 2391 | 2321 | 2261 | 2179 | 2156 | 2015 |
| Black or African American only, not Hispanic or Latino | 4686 | 4528 | 4473 | 4191 | 4057 | 3865 | 3342 |
| White only, not Hispanic or Latino                     | 2049 | 1899 | 1822 | 1799 | 1729 | 1749 | 1676 |
| <b>Sex</b>   |      |      |      |      |      |      |      |
| Male   | 2927 | 2744 | 2621 | 2541 | 2521 | 2514 | 2339 |
| Female   | 2327 | 2235 | 2177 | 2139 | 2019 | 1971 | 1806 |
| <b>Age</b>   |      |      |      |      |      |      |      |
| <18  | *    | *    | 30   | 35   | *    | 54   | 56   |
| 0-4  | .    | .    | .    | .    | .    | .    | .    |
| 5-11   | *    | .    | .    | .    | .    | *    | .    |
| 12-17  | *    | *    | *    | *    | *    | *    | *    |
| <b>18-44</b>   | 1613 | 1531 | 1507 | 1461 | 1557 | 1494 | 1532 |
| <b>18-24</b>   | 341  | 268  | 285  | 290  | 334  | 295  | 267  |
| 25-44  | 1748 | 1677 | 1642 | 1578 | 1665 | 1628 | 1682 |
| <b>45-64</b>   | 2377 | 2257 | 2195 | 2134 | 2068 | 2093 | 2078 |
| 45-54  | 2005 | 1846 | 1854 | 1864 | 1875 | 1869 | 1919 |
| 55-64  | 2643 | 2571 | 2436 | 2308 | 2179 | 2231 | 2172 |
| <b>65+</b>   | 3101 | 2939 | 2800 | 2720 | 2574 | 2487 | 2507 |
| 65-74  | 3186 | 2990 | 2894 | 2771 | 2619 | 2543 | 2565 |
| 75-84  | 3351 | 3156 | 2934 | 2873 | 2799 | 2695 | 2807 |
| 85+  | 1946 | 2073 | 1976 | 2073 | 1765 | 1691 | 1485 |

Data Source: Special analyses, USRDS ESRD Database and CDC Bridged Race Intercensal Estimates Dataset, Incident ESRD patients. Adjusted for age/sex/race; Ref: 2012. National Health Interview Survey 2006–2013 used to estimate diabetes mellitus prevalence. “.” Zero values in this cell; \*Values for cells with 10 or fewer patients are suppressed. Abbreviations: CDC, Centers for Disease Control and Prevention; CKD, chronic kidney disease; ESRD, end-stage renal disease; Ref, reference.



## Nephrologist Care

At 34.3% in 2013, the proportion of CKD patients receiving care from a nephrologist at least 12 months before the start of renal replacement therapy exceeded the HP2020 goal of 29.8%, and reflected nearly a nine percent increase from the level of 25.7% seen in 2005 (Table 2.8).

Variations by race continued to be observed, with Whites (35.9%) and Asians (35.5%) experiencing greater rates than Blacks (30.2%) and Native Hawaiians and Pacific Islanders (30.1%). While rates

overall have increased, the gap between lowest and highest has remained fairly consistent, increasing slightly from 5.2% in 2005 to 5.7% in 2013. Rates by ethnicity were lowest among Hispanics/Latinos, at 27.1%.

Even broader variation was observed by age, with rates ranging from 27.6% among those aged 18-44 to 46.1% among those under age 18. In contrast to the differences seen by race and age, rates of pre-ESRD nephrologist care were nearly identical by sex, at 34.2% among males and 34.4% among females.

**vol 2 Table 2.8 HP2020 CKD-10 Increase the proportion of chronic kidney disease patients receiving care from a nephrologist at least 12 months before the start of renal replacement therapy: Target 29.8%**

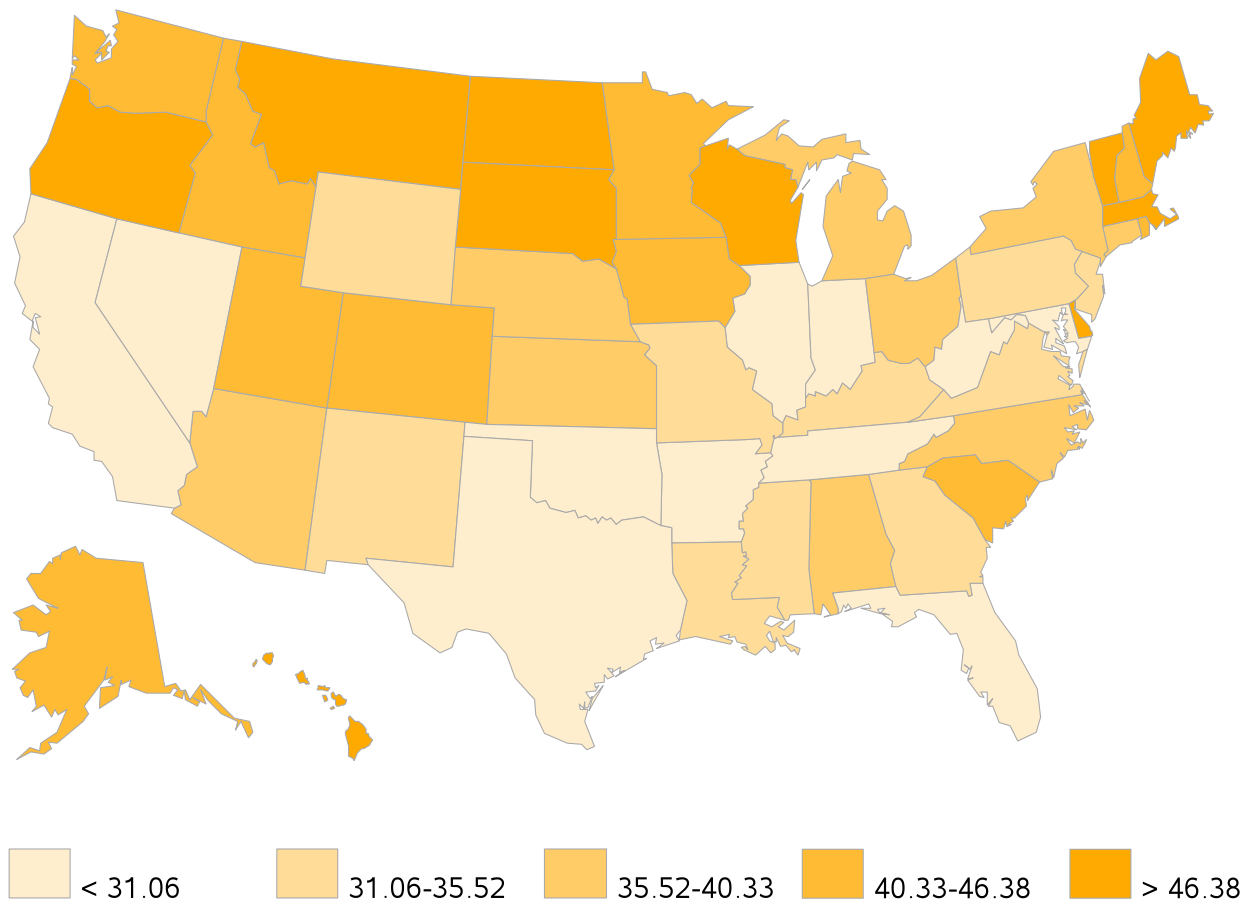
|  | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|------|------|------|------|------|------|------|------|------|
| <b>All</b>   | 25.7 | 26.5 | 27.3 | 28.6 | 28.6 | 29.6 | 31.0 | 33.1 | 34.3 |
| <b>Race</b>  |      |      |      |      |      |      |      |      |      |
| American Indian or Alaskan Native only                 | 25.3 | 27.2 | 26.1 | 27.9 | 26.9 | 23.8 | 27.8 | 30.2 | 30.5 |
| Asian only   | 25.9 | 23.8 | 26.6 | 27.6 | 29.1 | 29.8 | 31.4 | 31.9 | 35.5 |
| Native Hawaiian or other Pacific Islander only~        | 23.5 | 25.2 | 23.9 | 22.5 | 24.0 | 25.4 | 27.0 | 27.5 | 30.1 |
| Black or African American only                         | 22.1 | 23.2 | 24.0 | 24.7 | 24.9 | 25.5 | 27.2 | 29.6 | 30.2 |
| White only   | 27.3 | 28.0 | 28.8 | 30.4 | 30.2 | 31.3 | 32.7 | 34.7 | 35.9 |
| Two or more races                                      | 23.0 | 22.7 | 24.6 | 29.1 | 28.6 | 31.4 | 31.5 | 33.3 | 45.5 |
| <b>Ethnicity</b>                                       |      |      |      |      |      |      |      |      |      |
| Hispanic or Latino                                     | 20.0 | 21.3 | 21.3 | 22.3 | 22.6 | 23.7 | 25.1 | 25.8 | 27.1 |
| Not Hispanic or Latino                                 | 26.6 | 27.2 | 28.2 | 29.6 | 29.5 | 30.5 | 32.1 | 34.3 | 35.5 |
| Black or African American only, not Hispanic or Latino | 22.2 | 23.2 | 24.1 | 24.7 | 25.0 | 25.6 | 27.2 | 29.7 | 30.3 |
| White only, not Hispanic or Latino                     | 28.8 | 29.4 | 30.5 | 32.2 | 32.0 | 33.3 | 34.7 | 37.0 | 38.2 |
| <b>Sex</b>   |      |      |      |      |      |      |      |      |      |
| Male   | 26.1 | 26.5 | 27.3 | 28.4 | 28.4 | 29.6 | 30.8 | 33.1 | 34.2 |
| Female   | 25.3 | 26.4 | 27.3 | 28.8 | 28.9 | 29.5 | 31.4 | 33.1 | 34.4 |
| <b>Age</b>   |      |      |      |      |      |      |      |      |      |
| <b>&lt;18</b>  | 39.8 | 36.0 | 35.2 | 40.0 | 39.5 | 37.6 | 44.7 | 40.8 | 46.1 |
| 0-4  | 25.0 | 20.3 | 25.7 | 26.7 | 23.5 | 22.7 | 25.0 | 27.3 | 29.2 |
| 5-11   | 50.5 | 48.6 | 41.1 | 53.1 | 48.0 | 48.8 | 59.4 | 51.5 | 57.7 |
| 12-17  | 41.4 | 36.8 | 36.9 | 40.3 | 42.4 | 39.5 | 47.5 | 42.7 | 48.4 |
| <b>18-44</b>   | 23.3 | 23.0 | 23.6 | 24.4 | 23.9 | 24.3 | 25.7 | 27.8 | 27.6 |
| <b>18-24</b>   | 24.6 | 23.2 | 24.9 | 23.9 | 24.7 | 25.4 | 27.6 | 26.6 | 28.0 |
| 25-44  | 23.1 | 23.0 | 23.5 | 24.4 | 23.8 | 24.2 | 25.5 | 27.9 | 27.6 |
| <b>45-64</b>   | 25.7 | 26.1 | 26.7 | 27.3 | 27.4 | 27.9 | 29.5 | 31.1 | 32.1 |
| 45-54  | 24.0 | 25.0 | 25.5 | 25.3 | 25.8 | 26.2 | 28.4 | 29.5 | 30.6 |
| 55-64  | 26.8 | 26.9 | 27.4 | 28.6 | 28.5 | 29.0 | 30.1 | 32.1 | 33.0 |
| <b>65+</b>   | 26.2 | 27.5 | 28.6 | 30.5 | 30.5 | 32.0 | 33.4 | 35.9 | 37.4 |
| 65-74  | 27.1 | 28.4 | 28.9 | 30.6 | 30.7 | 32.1 | 33.4 | 35.6 | 36.8 |
| 75-84  | 26.0 | 27.3 | 28.9 | 31.2 | 30.9 | 32.7 | 33.9 | 36.7 | 38.4 |
| 85+  | 22.9 | 24.2 | 26.7 | 27.6 | 28.3 | 29.7 | 31.5 | 34.1 | 36.4 |

Data Source: Special analyses, Medicare 5 percent sample. Incident hemodialysis patients with a valid ESRD Medical Evidence CMS 2728 form; nephrologist care determined from Medical Evidence form. Abbreviations: CMS, Centers for Medicare and Medicaid Services; CKD, chronic kidney disease; ESRD, end-stage renal disease.

Substantial geographic variation in the proportion of chronic kidney disease patients receiving care from a nephrologist at least 12 months before the start of renal replacement therapy was also observed (Figure 2.1). While more than 80% of U.S. states met or exceeded the HP2020 target of 29.8% in 2013,

percentages varied by over 50% from the lowest quintile to the highest quintile. In general, the highest percentages were observed in the North Atlantic and Northern Plains regions, with the lowest occurring in the Mid-South and Southern Plains states.

**vol 2 Figure 2.1 HP2020 CKD-10 Geographic distribution of the adjusted proportion of chronic kidney disease patients receiving care from a nephrologist at least 12 months before the start of renal replacement therapy, by state, in the U.S. population, 2013: Target 29.8%**



Data Source: Special analyses, Medicare 5 percent sample. Incident hemodialysis patients with a valid ESRD Medical Evidence CMS 2728 form; nephrologist care determined from Medical Evidence form. Adjusted for age, sex, and race. Abbreviations: CDC, Centers for Disease Control and Prevention; CKD, chronic kidney disease; ESRD, end-stage renal disease.

## Vascular Access

In this year's ADR, we introduce data from CROWNWeb, a dialysis data reporting system launched in 2012. Vascular access is an important aspect of hemodialysis care, and arteriovenous (AV) fistulas are established as the primary access of choice. The HP2020 CKD Objective 11.1 examines the use of AV fistulas among prevalent hemodialysis patients (see Table 2.9). Previous ADRs have reported data for this objective from the ESRD Clinical Performance Measures (CPM) Project, which only collected this information through 2007.

In 2013, 62.8% of prevalent adult hemodialysis patients were using an AV fistula as their primary access, more than double the proportion reported in ESRD CPM data for 2000 (29.9%) and well above the last available ESRD CPM data from 2007 (49.6%; USRDS, 2012). This overall prevalence achieved the previous HP2020 target of 50.6%, although comparisons should be made with caution as this target was derived from a different data source (ESRD CPM). Blacks have consistently shown the lowest use of AV fistulas, although this has improved steadily, and reached 57.8% in 2013. A higher proportion of males than females were using AV fistulas, 68.8% compared to 55.1%; steady improvement has been seen in both sexes. Use of an AV fistula declined with age, peaking at 66.3% in patients aged 18-44 and falling to 59.2% in patients aged 65 years and older.

**vol 2 Table 2.9 HP2020 CKD-11.1: Increase the proportion of adult hemodialysis patients who use arteriovenous fistulas as the primary mode of vascular access: Previous data source target 50.6%**

|  | 2012 | 2013 |
|--|------|------|
| <b>All</b>   | 61.4 | 62.8 |
| <b>Race</b>  |      |      |
| American Indian or Alaskan Native only                 | 71.8 | 74.2 |
| Asian only   | 65.8 | 67.3 |
| Native Hawaiian or other Pacific Islander only~        | 65.2 | 67.7 |
| Black or African American only                         | 56.4 | 57.8 |
| White only   | 63.8 | 65.2 |
| Two or more races                                      | 67.6 | 68.6 |
| <b>Ethnicity</b>                                       |      |      |
| Hispanic or Latino                                     | 66.7 | 67.9 |
| Not Hispanic or Latino                                 | 60.2 | 61.7 |
| Black or African American only, not Hispanic or Latino | 56.3 | 57.8 |
| White only, not Hispanic or Latino                     | 62.5 | 64.0 |
| <b>Sex</b>   |      |      |
| Male   | 67.7 | 68.8 |
| Female   | 53.2 | 55.1 |
| <b>Age</b>   |      |      |
| <b>18-44</b>   | 65.3 | 66.3 |
| 18-24  | 64.5 | 66.1 |
| 25-44  | 65.4 | 66.3 |
| <b>45-64</b>   | 63.4 | 64.9 |
| 45-54  | 65.1 | 66.4 |
| 55-64  | 62.3 | 63.8 |
| <b>65+</b>   | 57.6 | 59.2 |
| 65-74  | 59.8 | 61.4 |
| 75-84  | 56.5 | 57.9 |
| 85+  | 47.5 | 48.9 |

*Data Source: Special analyses, CROWNWeb. Prevalent hemodialysis patients with a valid ESRD Medical Evidence CMS 2728 form, vascular access type determined from CROWNWeb. Abbreviations: CMS, Centers for Medicare and Medicaid Services; CKD, chronic kidney disease; ESRD, end-stage renal disease.*

In comparison to AV fistulas, use of a hemodialysis catheter is associated with increased morbidity and mortality. As such, reducing the proportion of hemodialysis patients that are dependent on catheters is another important CKD objective of HP2020. Data for this objective was also obtained from CROWNWeb and interpretation of target achievement may be limited, as the former HP2020 target was derived from a different data source (ESRD CPM Project).

In 2013, 15.1% of prevalent adult hemodialysis patients were using catheters as the primary mode of access, a 5.0% decrease from 2012 (Table 2.10). Notably, the most recent data from the ESRD CPM Project showed that 27.7% of hemodialysis patients were using a catheter in 2007.

A lower proportion of Blacks were using catheters in 2013 compared to Whites (14.3% versus 16.0%), while Native Americans and Asians reported even lower use (11.7% and 13.3%, respectively). A higher proportion of females than males were using catheters (17.5% compared to 13.3%). Use of catheters was similar in the 18-44 and 45-64 years age groups at 14.2% and 13.9% respectively, but rose to 16.9% in patients aged 65 years and older. Among patients aged 85 years and older, 26.7% were catheter-dependent.

**vol 2 Table 2.10 HP2020 CKD-11.2: Reduce the proportion of adult hemodialysis patients who use catheters as the only mode of vascular access: Previous data source target 26.1%**

|  | 2012 | 2013 |
|--|------|------|
| <b>All</b>   | 15.9 | 15.1 |
| <b>Race</b>  |      |      |
| American Indian or Alaskan Native only                 | 12.7 | 11.7 |
| Asian only   | 13.9 | 13.3 |
| Native Hawaiian or other Pacific Islander only~        | 14.7 | 14.2 |
| Black or African American only                         | 15.0 | 14.3 |
| White only   | 16.7 | 16.0 |
| Two or more races                                      | 11.4 | 10.0 |
| <b>Ethnicity</b>                                       |      |      |
| Hispanic or Latino                                     | 13.9 | 13.4 |
| Not Hispanic or Latino                                 | 16.3 | 15.5 |
| Black or African American only, not Hispanic or Latino | 14.9 | 14.2 |
| White only, not Hispanic or Latino                     | 17.8 | 17.1 |
| <b>Sex</b>   |      |      |
| Male   | 13.8 | 13.3 |
| Female   | 18.5 | 17.5 |
| <b>Age</b>   |      |      |
| <b>18-44</b>   | 14.9 | 14.2 |
| 18-24  | 17.9 | 16.4 |
| 25-44  | 14.6 | 13.9 |
| <b>45-64</b>   | 14.5 | 13.9 |
| 45-54  | 13.8 | 13.2 |
| 55-64  | 15.0 | 14.4 |
| <b>65+</b>   | 17.6 | 16.9 |
| 65-74  | 15.7 | 15.2 |
| 75-84  | 18.4 | 17.7 |
| 85+  | 27.6 | 26.7 |

*Data Source: Special analyses, CROWNWeb. Prevalent hemodialysis patients with a valid ESRD Medical Evidence CMS 2728 form, vascular access type determined from CROWNWeb. Abbreviations: CMS, Centers for Medicare and Medicaid Services; CKD, chronic kidney disease; ESRD, end-stage renal disease.*

In 2013, 37.2% of incident hemodialysis patients had a maturing arteriovenous fistula or were using one as their primary vascular access, a 20% increase from 2005 (see Table 2.11). This marks the third consecutive year that the target for this objective was met. The proportions were higher in males than females (39.2% compared to 34.4%), and slightly higher in Whites than Blacks (37.5% compared to 35.6%). By age group,

patients aged 65-74 had the highest proportion of arteriovenous fistula use or maturing fistula at 39.1%, compared to 28.1% in patients aged 18-24 and 33.5% in patients aged 25-44.

Programs such as HP2020 and the Fistula First Initiative continue to work to increase the use of fistulas, and to promote early placement prior to initiation of ESRD therapy.

**vol 2 Table 2.11 HP2020 CKD-11.3 Increase the proportion of adult hemodialysis patients who use arteriovenous fistulas or have a maturing fistula as the primary mode of vascular access at the start of renal replacement therapy: Target 34.5%**

|  | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|------|------|------|------|------|------|------|------|------|
| <b>All</b>   | 31.1 | 31.9 | 31.6 | 31.2 | 32.3 | 33.8 | 35.1 | 36.6 | 37.2 |
| <b>Race</b>  |      |      |      |      |      |      |      |      |      |
| American Indian or Alaskan Native only                 | 36.2 | 39.1 | 37.6 | 41.4 | 41.4 | 41.1 | 40.2 | 40.8 | 42.4 |
| Asian only   | 36.0 | 37.5 | 35.2 | 35.9 | 35.5 | 37.4 | 37.1 | 38.0 | 41.3 |
| Native Hawaiian or other Pacific Islander only~        | 41.0 | 34.7 | 35.4 | 32.9 | 32.4 | 32.4 | 36.0 | 37.7 | 39.5 |
| Black or African American only                         | 28.4 | 29.3 | 29.7 | 29.2 | 30.6 | 32.0 | 33.9 | 35.8 | 35.6 |
| White only   | 31.9 | 32.7 | 32.1 | 31.7 | 32.7 | 34.3 | 35.3 | 36.8 | 37.5 |
| Two or more races                                      | 25.8 | 36.4 | 33.2 | 28.9 | 36.1 | 37.8 | 39.1 | 42.9 | 33.3 |
| <b>Ethnicity</b>                                       |      |      |      |      |      |      |      |      |      |
| Hispanic or Latino                                     | 31.4 | 32.3 | 29.9 | 29.7 | 31.0 | 32.8 | 33.4 | 34.2 | 34.8 |
| Not Hispanic or Latino                                 | 31.0 | 31.9 | 31.9 | 31.4 | 32.5 | 34.0 | 35.4 | 37.1 | 37.6 |
| Black or African American only, not Hispanic or Latino | 28.3 | 29.2 | 29.7 | 29.1 | 30.6 | 31.9 | 33.9 | 35.8 | 35.6 |
| White only, not Hispanic or Latino                     | 32.0 | 32.9 | 32.7 | 32.3 | 33.1 | 34.8 | 36.0 | 37.7 | 38.4 |
| <b>Sex</b>   |      |      |      |      |      |      |      |      |      |
| Male   | 34.9 | 35.1 | 34.8 | 33.9 | 34.9 | 36.4 | 37.8 | 39.1 | 39.2 |
| Female   | 26.3 | 27.9 | 27.4 | 27.6 | 28.8 | 30.4 | 31.4 | 33.3 | 34.4 |
| <b>Age</b>   |      |      |      |      |      |      |      |      |      |
| <b>18-44</b>   | 29.5 | 29.5 | 28.2 | 27.5 | 29.2 | 31.1 | 31.9 | 32.5 | 33.0 |
| 18-24  | 25.6 | 22.3 | 20.2 | 21.0 | 22.7 | 23.6 | 25.0 | 25.4 | 28.1 |
| 25-44  | 29.9 | 30.3 | 29.0 | 28.2 | 29.8 | 31.8 | 32.6 | 33.1 | 33.5 |
| <b>45-64</b>   | 33.2 | 33.3 | 32.6 | 32.5 | 33.2 | 34.4 | 35.9 | 37.8 | 37.8 |
| 45-54  | 32.4 | 33.1 | 32.4 | 32.2 | 32.8 | 34.0 | 35.9 | 37.1 | 37.4 |
| 55-64  | 33.8 | 33.5 | 32.7 | 32.7 | 33.5 | 34.6 | 35.9 | 38.2 | 38.1 |
| <b>65+</b>   | 29.9 | 31.4 | 31.6 | 31.0 | 32.2 | 34.0 | 35.1 | 36.6 | 37.6 |
| 65-74  | 31.7 | 33.5 | 34.0 | 32.9 | 34.3 | 35.9 | 37.0 | 38.7 | 39.1 |
| 75-84  | 29.4 | 30.6 | 30.5 | 30.7 | 31.8 | 33.7 | 34.8 | 36.0 | 37.7 |
| 85+  | 23.7 | 25.0 | 25.1 | 24.0 | 25.3 | 26.6 | 28.3 | 29.1 | 29.9 |

Data Source: Special analyses, Medicare 5 percent sample. Incident hemodialysis patients aged 18 & older. Abbreviations: CKD, chronic kidney disease.

## Transplantation

The proportion of ESRD patients younger than age 70 who were wait-listed or received a deceased donor kidney transplant within one year of initiating dialysis therapy continues to increase, at 18.0% in 2013, although this level remained below the HP2020 target of 18.4% (Table 2.12).

The target was exceeded by Asians (34.1%), Whites (19.0%), those of two or more races (37.5%), females (18.9%), and those younger than age 18 (56.6%), aged 18-44 (27.4%), and aged 45-54 (19.1%). Groups furthest from the target included those aged 65-69, Blacks, and Native Americans. Gaps between groups with the highest and lowest percentages have remained fairly stable, showing only minor decreases over time.

**vol 2 Table 2.12 HP2020 CKD-12 Increase the proportion of dialysis patients waitlisted and/or receiving a deceased donor kidney transplant within 1 year of end-stage renal disease (ESRD) start (among patients under 70 years of age): Target 18.4% of dialysis patients**

|  | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>All</b>   | 15.2 | 14.5 | 14.5 | 14.5 | 15.3 | 15.8 | 16.9 | 17.0 | 16.7 | 17.2 | 16.9 | 17.5 | 17.7 | 18.0 |
| <b>Race</b>  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| American Indian or Alaskan Native only                 | 12.9 | 9.7  | 10.1 | 9.5  | 10.3 | 10.9 | 10.4 | 11.4 | 10.5 | 11.5 | 11.4 | 11.3 | 12.3 | 12.4 |
| Asian only   | 26.8 | 28.7 | 28.2 | 28.3 | 32.2 | 28.2 | 31.3 | 30.8 | 31.1 | 32.0 | 32.0 | 33.0 | 32.1 | 34.1 |
| Native Hawaiian or other Pacific Islander only~        | 17.4 | 17.3 | 18.7 | 19.6 | 18.2 | 16.1 | 15.1 | 14.9 | 14.3 | 14.8 | 15.2 | 14.8 | 16.9 | 18.3 |
| Black or African American only                         | 11.2 | 10.5 | 10.7 | 10.5 | 11.6 | 12.0 | 13.1 | 13.3 | 13.2 | 13.9 | 13.8 | 14.4 | 14.8 | 15.0 |
| White only   | 17.0 | 16.2 | 16.1 | 16.3 | 16.7 | 17.5 | 18.4 | 18.5 | 18.1 | 18.2 | 17.8 | 18.5 | 18.6 | 19.0 |
| Two or more races                                      |      |      |      |      |      | 14.0 | 19.4 | 13.8 | 23.5 | 23.9 | 23.0 | 17.6 | 20.5 | 37.5 |
| <b>Ethnicity</b>                                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Hispanic or Latino                                     | 12.9 | 12.7 | 13.3 | 14.1 | 14.5 | 15.7 | 17.6 | 17.7 | 17.3 | 18.2 | 17.5 | 18.4 | 18.1 | 18.2 |
| Not Hispanic or Latino                                 | 15.5 | 14.8 | 14.6 | 14.6 | 15.4 | 15.8 | 16.7 | 16.8 | 16.6 | 16.9 | 16.7 | 17.2 | 17.5 | 17.9 |
| Black or African American only, not Hispanic or Latino | 11.2 | 10.5 | 10.7 | 10.5 | 11.6 | 11.9 | 13.0 | 13.2 | 13.2 | 13.8 | 13.8 | 14.4 | 14.8 | 14.9 |
| White only, not Hispanic or Latino                     | 18.0 | 17.1 | 16.8 | 16.7 | 17.2 | 18.0 | 18.7 | 18.8 | 18.3 | 18.2 | 17.9 | 18.3 | 18.7 | 19.3 |
| <b>Sex</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Male   | 13.4 | 13.4 | 12.7 | 13.0 | 13.6 | 14.2 | 15.3 | 15.7 | 15.6 | 15.8 | 15.7 | 16.3 | 16.5 | 17.1 |
| Female   | 16.4 | 15.2 | 15.7 | 15.5 | 16.4 | 16.8 | 17.9 | 17.8 | 17.4 | 18.0 | 17.7 | 18.3 | 18.7 | 18.9 |
| <b>Age</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| <b>&lt;18</b>  | 41.9 | 40.2 | 40.8 | 48.9 | 44.9 | 52.7 | 58.2 | 56.0 | 59.0 | 58.2 | 55.3 | 54.0 | 55.1 | 56.6 |
| 0-4  | 24.0 | 26.1 | 31.5 | 39.1 | 30.9 | 34.5 | 40.9 | 36.5 | 40.1 | 44.3 | 37.7 | 34.4 | 29.6 | 35.5 |
| 5-11   | 42.2 | 49.2 | 44.2 | 50.0 | 50.7 | 63.6 | 61.5 | 65.1 | 66.6 | 64.2 | 60.3 | 62.6 | 62.5 | 67.4 |
| 12-17  | 47.1 | 40.0 | 41.6 | 51.2 | 47.3 | 53.6 | 62.7 | 59.4 | 63.2 | 61.3 | 60.9 | 58.6 | 64.4 | 61.8 |
| <b>18-44</b>   | 26.4 | 25.2 | 24.5 | 23.8 | 25.2 | 24.9 | 26.2 | 25.6 | 25.3 | 25.9 | 25.2 | 27.0 | 26.2 | 27.4 |
| 18-24  | 30.5 | 29.1 | 30.2 | 29.5 | 33.5 | 27.8 | 32.4 | 32.0 | 30.0 | 32.5 | 32.6 | 33.5 | 34.0 | 38.6 |
| 25-44  | 26.0 | 24.9 | 23.9 | 23.3 | 24.5 | 24.6 | 25.7 | 25.0 | 24.9 | 25.3 | 24.5 | 26.4 | 25.5 | 26.3 |
| <b>45-64</b>   | 14.1 | 13.4 | 13.4 | 13.5 | 14.0 | 14.6 | 15.7 | 15.9 | 15.5 | 15.8 | 15.7 | 16.3 | 16.8 | 16.7 |
| 45-54  | 18.2 | 17.4 | 17.1 | 16.6 | 16.8 | 16.8 | 18.3 | 18.6 | 17.2 | 18.3 | 17.9 | 18.6 | 19.1 | 19.1 |
| 55-64  | 11.2 | 10.5 | 10.7 | 11.4 | 12.1 | 13.1 | 13.8 | 14.1 | 14.3 | 14.2 | 14.3 | 14.9 | 15.4 | 15.2 |
| <b>65+</b>   | 5.0  | 5.3  | 6.0  | 6.2  | 7.4  | 8.0  | 8.9  | 9.4  | 9.9  | 10.9 | 10.9 | 10.8 | 10.9 | 12.1 |
| 65-69  | 5.0  | 5.3  | 6.0  | 6.2  | 7.4  | 8.0  | 8.9  | 9.4  | 9.9  | 10.9 | 10.9 | 10.8 | 10.9 | 12.1 |

Data Source: Special analyses, Medicare 5 percent sample. Incident ESRD patients younger than 70. Abbreviations: CKD, chronic kidney disease; ESRD, end-stage renal disease.

At 14.1%, the proportion of 2010 patients younger than age 70 who received a kidney transplant within three years of starting ESRD therapy remained well below the HP2020 target of 19.7% (see Table 2.13). This continues the slow but consistent decrease observed since 1998, when 19.9% of patients received a transplant within three years of initiating ESRD therapy.

Such rates were highest among Asians (17.2%) and Whites (17.1%), and lowest among American Indians/Alaskan Natives (7.2%) and Native Hawaiians and Pacific Islanders (7.3%). Males (14.5%) were slightly more likely to receive a transplant as compared to females (13.5%). The percentage of patients receiving transplants decreased with age, from 73.2% in pediatric patients to 8.0% among those aged 65-69.

**vol 2 Table 2.13 HP2020 CKD-13.1 Increase the proportion of patients receiving a kidney transplant within 3 years of end-stage renal disease (ESRD): Target 19.7%**

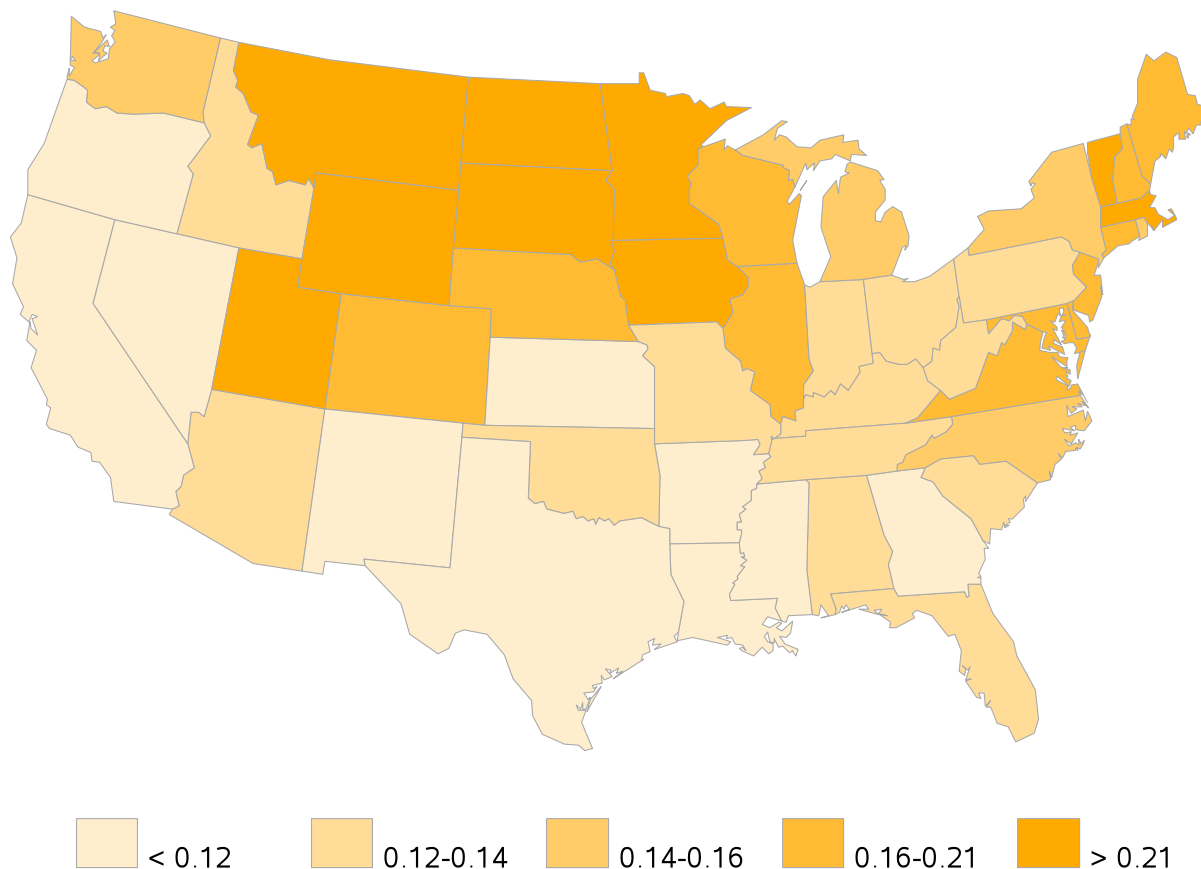
|  | 1998 (%) | 1999 (%) | 2000 (%) | 2001 (%) | 2002 (%) | 2003 (%) | 2004 (%) | 2005 (%) | 2006 (%) | 2007 (%) | 2008 (%) | 2009 (%) | 2010 (%) |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>All</b>   | 19.9     | 19.4     | 19.1     | 18.3     | 18.3     | 18.0     | 18.2     | 17.6     | 17.1     | 16.6     | 15.6     | 14.6     | 14.1     |
| <b>Race</b>  |          |          |          |          |          |          |          |          |          |          |          |          |          |
| American Indian or Alaskan Native only                 | 11.3     | 10.0     | 15.4     | 8.7      | 11.6     | 8.8      | 9.1      | 8.7      | 10.0     | 10.1     | 6.7      | 7.2      | 7.2      |
| Asian only   | 18.8     | 17.8     | 18.3     | 18.1     | 20.8     | 21.4     | 20.3     | 18.2     | 18.7     | 17.4     | 17.8     | 16.7     | 17.2     |
| Native Hawaiian or other Pacific Islander only~        | 12.3     | 12.8     | 8.3      | 12.6     | 12.0     | 11.4     | 12.5     | 9.4      | 9.7      | 10.5     | 10.5     | 8.2      | 7.3      |
| Black or African American only                         | 9.8      | 9.5      | 9.8      | 8.8      | 9.5      | 9.2      | 9.9      | 9.5      | 8.9      | 9.0      | 8.6      | 7.7      | 7.6      |
| White only   | 26.3     | 25.2     | 24.4     | 23.7     | 23.1     | 22.8     | 22.6     | 22.0     | 21.3     | 20.6     | 19.2     | 18.0     | 17.1     |
| Two or more races                                      |          |          |          |          |          |          |          | 16.4     | 16.5     | 14.6     | 17.6     | 17.0     | 14.4     |
| <b>Ethnicity</b>                                       |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Hispanic or Latino                                     | 16.7     | 14.7     | 15.0     | 14.2     | 14.0     | 14.4     | 14.7     | 14.7     | 14.5     | 13.8     | 12.5     | 11.7     | 11.2     |
| Not Hispanic or Latino                                 | 20.0     | 19.6     | 19.4     | 18.6     | 18.8     | 18.3     | 18.5     | 17.9     | 17.2     | 16.8     | 15.9     | 14.8     | 14.3     |
| Black or African American only, not Hispanic or Latino | 9.7      | 9.4      | 9.8      | 8.7      | 9.5      | 9.1      | 9.9      | 9.5      | 8.9      | 8.9      | 8.5      | 7.6      | 7.5      |
| White only, not Hispanic or Latino                     | 28.3     | 27.8     | 26.9     | 26.3     | 25.9     | 25.3     | 24.9     | 24.3     | 23.7     | 23.0     | 21.7     | 20.4     | 19.4     |
| <b>Sex</b>   |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Male   | 21.9     | 21.1     | 20.5     | 19.7     | 19.9     | 19.6     | 19.5     | 19.0     | 18.5     | 17.5     | 16.2     | 15.3     | 14.5     |
| Female   | 17.5     | 17.3     | 17.3     | 16.5     | 16.2     | 15.9     | 16.4     | 15.8     | 15.3     | 15.3     | 14.8     | 13.7     | 13.5     |
| <b>Age</b>   |          |          |          |          |          |          |          |          |          |          |          |          |          |
| <b>&lt;18</b>  | 72.0     | 73.8     | 71.9     | 69.1     | 69.5     | 74.3     | 74.0     | 75.6     | 77.2     | 77.9     | 75.1     | 77.5     | 73.2     |
| 0-4  | 73.5     | 80.3     | 74.5     | 69.6     | 73.9     | 76.3     | 73.6     | 73.9     | 73.8     | 76.1     | 65.8     | 73.8     | 68.3     |
| 5-11   | 78.2     | 75.9     | 72.6     | 76.9     | 75.7     | 78.8     | 81.8     | 81.2     | 80.2     | 87.5     | 84.3     | 82.9     | 79.5     |
| 12-17  | 68.4     | 71.0     | 71.1     | 65.1     | 65.1     | 71.9     | 70.9     | 74.1     | 77.3     | 75.2     | 75.1     | 76.8     | 72.6     |
| <b>18-44</b>   | 33.6     | 32.5     | 31.3     | 29.9     | 29.6     | 28.7     | 29.2     | 27.6     | 26.8     | 25.4     | 24.0     | 22.7     | 22.0     |
| 18-24  | 44.3     | 42.2     | 43.0     | 41.8     | 39.5     | 42.0     | 41.9     | 40.0     | 37.8     | 35.1     | 34.2     | 34.6     | 34.8     |
| 25-44  | 32.4     | 31.4     | 30.0     | 28.6     | 28.5     | 27.1     | 27.8     | 26.2     | 25.5     | 24.3     | 22.9     | 21.4     | 20.6     |
| <b>45-64</b>   | 16.3     | 15.7     | 15.9     | 15.3     | 15.1     | 15.0     | 15.1     | 14.9     | 14.5     | 14.1     | 13.2     | 12.3     | 11.8     |
| 45-54  | 21.0     | 20.1     | 20.2     | 19.5     | 18.4     | 18.3     | 18.5     | 17.4     | 17.1     | 17.0     | 15.5     | 14.8     | 13.8     |
| 55-64  | 12.5     | 12.0     | 12.5     | 11.8     | 12.5     | 12.4     | 12.6     | 13.1     | 12.6     | 12.0     | 11.6     | 10.6     | 10.5     |
| <b>65+</b>   | 5.3      | 5.9      | 6.2      | 6.5      | 7.3      | 7.6      | 8.0      | 7.8      | 8.3      | 8.3      | 8.2      | 7.8      | 8.0      |
| 65-69  | 5.3      | 5.9      | 6.2      | 6.5      | 7.3      | 7.6      | 8.0      | 7.8      | 8.3      | 8.3      | 8.2      | 7.8      | 8.0      |

Data Source: Special analyses, Medicare 5 percent sample. Incident ESRD patients younger than 70. Abbreviations: CKD, chronic kidney disease; ESRD, end-stage renal disease.

Geographic variation in the proportion of patients receiving a kidney transplant within three years of end-stage renal disease was also observed (Figure 2.2). In 2010, just over 20% of U.S. states met or exceeded the HP2020 target of 19.7%; these were almost exclusively located in the North Atlantic and Northern

Plains regions. Overall, the percentages of patients by state varied by 75% from the lowest quintile to the highest quintile. States with the lowest percentages were generally observed throughout the South and in the West.

**vol 2 Figure 2.2 HP2020 CKD-13.1 Geographic distribution of the adjusted proportion of patients receiving a kidney transplant within 3 years of end-stage renal disease (ESRD), by state, in the U.S. population, 2010: Target 19.7%**



*Data Source: Special analyses, Medicare 5 percent sample. Incident ESRD patients younger than 70. Adjusted for age, sex, and race. Alaska and Hawaii are not reported due to small sample size. Abbreviations: CKD, chronic kidney disease.*



In 2013 the percentage of patients receiving a preemptive transplant at the start of ESRD remained stable at 3.7%, maintaining a small increase observed over the past decade (see Table 2.14). Preemptive transplants were, by far, most common in pediatric

patients, reaching 32.3% among those aged five to 11. Rates were slightly higher among females at 4.0%, compared to males at 3.6%. Substantial variation was observed by race, however, ranging from 1.0% among Blacks to 4.5% among Asians.

**vol 2 Table 2.14 HP2020 CKD-13.2 Increase the proportion of patients who receive a preemptive transplant at the start of ESRD: No applicable target**

|  | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>All</b>   | 3.3  | 3.3  | 3.4  | 3.7  | 3.9  | 4.1  | 4.1  | 4.0  | 3.8  | 3.9  | 4.0  | 3.7  | 3.7  |
| <b>Race</b>  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| American Indian or Alaskan Native only                 | *    | *    | 1.5  | *    | *    | 1.4  | *    | *    | 1.7  | *    | 1.6  | 1.3  | 1.2  |
| Asian only   | 2.0  | 2.8  | 2.6  | 2.5  | 2.7  | 3.0  | 3.1  | 3.5  | 3.1  | 3.4  | 3.8  | 3.1  | 4.5  |
| Native Hawaiian or other Pacific Islander only~        | *    | *    | *    | *    | 1.0  | *    | 1.9  | 2.6  | 2.0  | *    | *    | *    | *    |
| Black or African American only                         | 0.6  | 0.7  | 0.7  | 0.8  | 0.9  | 1.0  | 1.1  | 1.1  | 1.1  | 1.2  | 1.2  | 0.9  | 1.0  |
| White only   | 4.1  | 4.2  | 4.1  | 4.6  | 4.9  | 5.1  | 5.2  | 5.0  | 4.7  | 4.7  | 4.8  | 4.3  | 4.2  |
| Two or more races                                      |      |      |      |      |      | *    | *    | *    | *    | *    | *    | *    | *    |
| <b>Ethnicity</b>                                       |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Hispanic or Latino                                     | 1.4  | 1.5  | 1.5  | 1.8  | 1.9  | 2.3  | 2.3  | 2.2  | 2.2  | 2.2  | 2.4  | 2.2  | 2.2  |
| Not Hispanic or Latino                                 | 3.2  | 3.3  | 3.3  | 3.6  | 3.8  | 3.9  | 4.1  | 3.9  | 3.7  | 3.8  | 3.8  | 3.4  | 3.5  |
| Black or African American only, not Hispanic or Latino | 0.6  | 0.7  | 0.7  | 0.8  | 0.9  | 1.0  | 1.1  | 1.1  | 1.1  | 1.2  | 1.2  | 0.9  | 1.0  |
| White only, not Hispanic or Latino                     | 4.8  | 4.9  | 4.8  | 5.4  | 5.7  | 6.0  | 6.3  | 6.0  | 5.5  | 5.6  | 5.7  | 5.1  | 4.9  |
| <b>Sex</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Male   | 3.5  | 3.4  | 3.5  | 3.6  | 3.9  | 4.2  | 4.2  | 3.9  | 3.8  | 3.9  | 4.0  | 3.6  | 3.6  |
| Female   | 3.1  | 3.3  | 3.2  | 3.7  | 3.8  | 4.0  | 3.9  | 4.0  | 3.8  | 3.9  | 4.0  | 3.8  | 4.0  |
| <b>Age</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |
| <b>&lt;18</b>  | 20.8 | 19.4 | 21.2 | 19.7 | 23.8 | 25.4 | 22.2 | 22.6 | 26.9 | 24.1 | 26.3 | 25.3 | 25.0 |
| 0-4  | 18.6 | 14.1 | 18.8 | 18.7 | 17.8 | 17.4 | 19.5 | 11.9 | 19.6 | 16.7 | 19.1 | 17.6 | 19.5 |
| 5-11   | 22.8 | 27.2 | 28.7 | 22.0 | 28.8 | 33.5 | 31.3 | 32.9 | 36.5 | 32.9 | 29.9 | 30.6 | 32.3 |
| 12-17  | 20.7 | 17.0 | 18.7 | 19.2 | 23.9 | 25.1 | 19.7 | 22.8 | 25.7 | 23.6 | 28.1 | 26.7 | 24.0 |
| <b>18-44</b>   | 6.0  | 5.9  | 5.5  | 6.1  | 5.9  | 6.4  | 6.1  | 6.1  | 5.8  | 5.7  | 6.1  | 5.7  | 5.6  |
| 18-24  | 8.8  | 8.6  | 9.0  | 9.5  | 9.2  | 10.6 | 8.4  | 9.2  | 9.3  | 9.7  | 9.4  | 9.6  | 8.2  |
| 25-44  | 5.6  | 5.6  | 5.2  | 5.8  | 5.5  | 6.0  | 5.9  | 5.8  | 5.5  | 5.3  | 5.7  | 5.3  | 5.3  |
| <b>45-64</b>   | 2.7  | 2.7  | 2.8  | 3.1  | 3.3  | 3.5  | 3.6  | 3.4  | 3.2  | 3.4  | 3.4  | 3.1  | 3.2  |
| 45-54  | 3.7  | 3.7  | 3.7  | 4.0  | 4.3  | 4.3  | 4.6  | 4.2  | 4.0  | 4.3  | 4.0  | 3.8  | 3.8  |
| 55-64  | 1.9  | 2.0  | 2.1  | 2.4  | 2.7  | 2.9  | 3.0  | 2.9  | 2.8  | 2.9  | 3.0  | 2.7  | 2.9  |
| <b>65+</b>   | 0.8  | 0.9  | 1.2  | 1.3  | 1.6  | 2.0  | 1.8  | 2.0  | 1.9  | 2.2  | 2.3  | 2.2  | 2.5  |
| 65-69  | 0.8  | 0.9  | 1.2  | 1.3  | 1.6  | 2.0  | 1.8  | 2.0  | 1.9  | 2.2  | 2.3  | 2.2  | 2.5  |

Data Source: Special analyses, Medicare 5 percent sample. Incident ESRD patients younger than 70. \*Values for cells with 10 or fewer patients are suppressed. Abbreviations: CKD, chronic kidney disease; ESRD, end-stage renal disease.

**Mortality**

As demonstrated in Table 2.15, the total death rate among prevalent patients on dialysis has fallen by more than 25%, from 232.3 deaths per 1,000 patient years in 2001 to 174.1 in 2013, exceeding the HP2020 target of 190.0 for the fourth year in a row. With respect to race, rates among Whites were highest and continue to exceed the target at 198.7 deaths per 1,000 patient years. Rates were lowest among Native Hawaiians and Pacific Islanders (119.7 deaths per 1,000 patient years) and those of two or more races

(116.2 deaths per 1,000). Mortality was slightly higher among females, at 176.5 deaths per 1,000 patient years, compared to males, at 172.3 deaths. Notably, significant reductions in rates since 2001 were observed across all age groups, with approximately 31% fewer deaths observed in 2013 for patients younger than 18 years (28.6 deaths per 1,000 patient years) compared with those in 2001 (41.6 deaths). Overall rates were highest among patients aged 65 and older (263.0 deaths per 1,000 patient years).

**vol 2 Table 2.15 HP2020 CKD-14.1 Reduce the total number of deaths for persons on dialysis: Target 190.0 deaths per 1,000 patient years**

|  | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>All</b>   | 232.3 | 229.9 | 228.4 | 224.2 | 220.5 | 216.3 | 207.8 | 200.6 | 195.5 | 188.6 | 184.9 | 177.6 | 174.1 |
| <b>Race</b>  |       |       |       |       |       |       |       |       |       |       |       |       |       |
| American Indian or Alaskan Native only                 | 202.0 | 194.6 | 188.2 | 182.4 | 177.8 | 170.1 | 162.6 | 167.5 | 171.6 | 151.3 | 146.1 | 146.6 | 144.2 |
| Asian only   | 168.4 | 154.8 | 166.2 | 157.8 | 161.5 | 153.4 | 149.6 | 137.4 | 138.5 | 129.5 | 132.7 | 127.6 | 123.4 |
| Native Hawaiian or other Pacific Islander only~        | 159.9 | 177.2 | 166.3 | 162.3 | 150.3 | 157.3 | 160.5 | 145.8 | 151.9 | 148.8 | 136.0 | 132.5 | 119.7 |
| Black or African American only                         | 185.1 | 181.3 | 181.8 | 181.2 | 176.7 | 171.3 | 164.8 | 158.4 | 153.9 | 146.7 | 141.6 | 136.4 | 134.4 |
| White only   | 274.6 | 273.4 | 270.2 | 263.3 | 259.9 | 255.6 | 244.9 | 236.9 | 230.3 | 224.0 | 221.0 | 211.8 | 198.7 |
| Two or more races                                      |       |       |       |       | 153.0 | 160.3 | 139.9 | 145.9 | 141.7 | 131.1 | 125.3 | 119.0 | 116.2 |
| <b>Ethnicity</b>                                       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Hispanic or Latino                                     | 170.9 | 168.8 | 167.8 | 163.6 | 160.5 | 153.7 | 143.3 | 138.1 | 140.1 | 132.2 | 130.8 | 131.0 | 126.4 |
| Not Hispanic or Latino                                 | 236.2 | 236.5 | 236.9 | 233.8 | 230.5 | 227.4 | 219.6 | 212.4 | 206.2 | 199.7 | 195.9 | 187.3 | 184.3 |
| Black or African American only, not Hispanic or Latino | 185.7 | 181.8 | 182.2 | 181.4 | 177.0 | 171.8 | 165.4 | 158.9 | 154.4 | 147.0 | 142.0 | 136.1 | 134.2 |
| White only, not Hispanic or Latino                     | 299.1 | 298.7 | 296.3 | 290.3 | 287.2 | 285.5 | 276.0 | 269.0 | 261.1 | 256.3 | 254.2 | 243.7 | 239.8 |
| <b>Sex</b>   |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Male   | 226.0 | 223.5 | 223.9 | 220.5 | 216.8 | 212.5 | 205.0 | 198.4 | 195.1 | 187.5 | 184.0 | 177.1 | 172.3 |
| Female   | 239.4 | 237.2 | 233.6 | 228.4 | 224.8 | 220.8 | 211.1 | 203.4 | 196.0 | 190.0 | 186.0 | 178.2 | 176.5 |
| <b>Age</b>   |       |       |       |       |       |       |       |       |       |       |       |       |       |
| <b>&lt;18</b>  | 41.6  | 38.2  | 46.4  | 40.2  | 37.9  | 37.8  | 30.6  | 33.5  | 36.7  | 36.7  | 23.7  | 28.5  | 28.6  |
| 0-4  | 155.0 | 91.0  | 99.2  | 91.8  | 82.2  | 88.3  | 67.0  | 93.9  | 87.1  | 78.1  | 40.9  | 58.4  | 69.1  |
| 5-11   | 38.6  | *     | 64.9  | 43.6  | 33.5  | 39.0  | *     | 35.5  | 46.0  | 44.2  | 34.5  | *     | *     |
| 12-17  | 16.7  | 34.4  | 28.3  | 27.8  | 29.4  | 25.3  | 21.6  | 15.6  | 17.6  | 20.2  | 13.4  | 16.1  | *     |
| <b>18-44</b>   | 88.7  | 90.2  | 87.6  | 84.0  | 82.5  | 79.8  | 75.8  | 71.2  | 70.1  | 63.9  | 61.5  | 59.4  | 58.1  |
| 18-24  | 48.7  | 45.6  | 51.8  | 52.3  | 49.1  | 49.7  | 47.1  | 44.1  | 40.1  | 37.5  | 36.8  | 32.6  | 33.3  |
| 25-44  | 92.1  | 93.9  | 90.6  | 86.6  | 85.3  | 82.3  | 78.2  | 73.4  | 72.6  | 66.0  | 63.5  | 61.6  | 60.0  |
| <b>45-64</b>   | 174.9 | 169.9 | 171.5 | 167.8 | 161.6 | 160.2 | 152.1 | 145.7 | 142.2 | 136.3 | 133.3 | 127.8 | 123.3 |
| 45-54  | 145.6 | 139.7 | 138.9 | 137.1 | 133.6 | 131.2 | 126.0 | 117.8 | 114.7 | 108.0 | 106.3 | 98.9  | 96.8  |
| 55-64  | 199.8 | 195.2 | 198.3 | 192.5 | 183.4 | 182.4 | 171.7 | 166.3 | 162.0 | 156.2 | 151.8 | 147.3 | 140.8 |
| <b>65+</b>   | 349.0 | 345.6 | 339.7 | 334.3 | 332.0 | 324.1 | 313.3 | 304.0 | 295.0 | 285.9 | 280.5 | 268.0 | 263.0 |
| 65-74  | 287.8 | 284.0 | 278.3 | 272.3 | 268.5 | 257.1 | 246.6 | 240.4 | 235.7 | 226.6 | 220.9 | 212.1 | 210.1 |
| 75-84  | 404.2 | 395.4 | 386.8 | 381.5 | 377.9 | 371.5 | 357.8 | 346.6 | 333.0 | 323.0 | 317.7 | 302.2 | 296.4 |
| 85+  | 562.5 | 567.4 | 547.3 | 527.3 | 524.8 | 515.1 | 508.9 | 485.2 | 464.4 | 455.3 | 449.8 | 433.5 | 423.3 |

Data Source: Special analyses, Medicare 5 percent sample. Period prevalent dialysis patients. \*Values for cells with 10 or fewer patients are suppressed. Abbreviations: CKD, chronic kidney disease.

Since a peak in 2003 at 388.4 deaths per 1,000 patient years at risk, the rate of mortality among dialysis patients in the first three months after initiation has fallen more than 16%, to 321.2 in 2013. For the second year in a row the rate was below the HP2020 target of 328.7 deaths (see Table 2.16). Whites, however, still exceeded the target rate at 377.4 deaths per 1,000. Rates were lowest among Native Hawaiians and

Pacific Islanders (158.3 deaths per 1,000) and Asians (189.3 deaths per 1,000), as well as among those with Hispanic/Latino ethnicity (188.7 deaths per 1,000). By sex, females had slightly higher rates than males, at 328.1 deaths per 1,000 patient years compared to 319.8 deaths per 1,000, respectively. Mortality rates were highest among those aged more than 85 years (871.7 deaths per 1,000 patient years).

**vol 2 Table 2.16 HP2020 CKD-14.2 Reduce the number of deaths in dialysis patients within the first 3 months of initiation of renal replacement therapy: Target 328.7 deaths per 1,000 patient years at risk**

|  | 2001   | 2002  | 2003   | 2004   | 2005   | 2006   | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  |
|--|--------|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| <b>All</b>   | 382.8  | 382.5 | 388.6  | 385.3  | 381.3  | 376.9  | 368.7 | 366.8 | 358.5 | 358.7 | 341.3 | 328.2 | 321.2 |
| <b>Race</b>  |        |       |        |        |        |        |       |       |       |       |       |       |       |
| American Indian or Alaskan Native only                 | 185.2  | 146.0 | 196.0  | 216.7  | 218.0  | 172.2  | 177.3 | 248.0 | 168.8 | 157.1 | 159.2 | 228.5 | 208.8 |
| Asian only   | 232.4  | 227.8 | 234.7  | 234.5  | 257.1  | 213.8  | 244.7 | 203.8 | 214.7 | 219.5 | 179.9 | 189.7 | 189.3 |
| Native Hawaiian or other Pacific Islander only~        | 210.2  | 180.6 | 186.5  | 185.0  | 173.4  | 222.7  | 172.8 | 153.9 | 194.5 | 162.8 | 179.2 | 122.2 | 158.3 |
| Black or African American only                         | 276.7  | 269.0 | 281.5  | 276.2  | 278.8  | 271.4  | 255.7 | 257.1 | 249.8 | 244.9 | 232.8 | 216.2 | 223.9 |
| White only   | 449.2  | 454.8 | 457.7  | 451.8  | 442.3  | 439.6  | 434.3 | 432.4 | 423.9 | 426.0 | 407.6 | 392.5 | 377.4 |
| Two or more races                                      |        |       |        |        | 301.9  | 303.7  | 280.9 | 295.6 | 209.6 | 262.1 | 260.4 | 247.2 | 237.9 |
| <b>Ethnicity</b>                                       |        |       |        |        |        |        |       |       |       |       |       |       |       |
| Hispanic or Latino                                     | 247.1  | 227.4 | 243.6  | 229.6  | 242.0  | 219.6  | 220.8 | 212.9 | 207.3 | 209.7 | 205.3 | 198.7 | 188.7 |
| Not Hispanic or Latino                                 | 400.0  | 403.7 | 407.7  | 405.9  | 399.5  | 397.7  | 389.9 | 387.9 | 379.9 | 381.4 | 363.5 | 347.3 | 341.9 |
| Black or African American only, not Hispanic or Latino | 277.6  | 268.8 | 281.9  | 277.3  | 278.6  | 271.7  | 257.5 | 257.9 | 250.4 | 245.8 | 234.4 | 214.8 | 224.2 |
| White only, not Hispanic or Latino                     | 484.5  | 498.0 | 498.4  | 495.1  | 484.1  | 489.9  | 483.4 | 486.2 | 478.0 | 482.1 | 462.9 | 444.6 | 427.3 |
| <b>Sex</b>   |        |       |        |        |        |        |       |       |       |       |       |       |       |
| Male   | 384.3  | 377.0 | 387.8  | 385.4  | 375.8  | 373.0  | 370.5 | 368.9 | 363.7 | 356.2 | 340.1 | 323.6 | 319.8 |
| Female   | 381.2  | 389.1 | 389.6  | 385.3  | 388.2  | 381.8  | 366.5 | 364.1 | 351.9 | 361.9 | 342.9 | 334.3 | 323.1 |
| <b>Age</b>   |        |       |        |        |        |        |       |       |       |       |       |       |       |
| <18  | *      | *     | *      | 59.3   | *      | *      | *     | .     | *     | *     | *     | *     | *     |
| 0-4  | *      | *     | *      | .      | *      | .      | *     | *     | *     | .     | *     | *     | *     |
| 5-11   | *      | *     | *      | *      | *      | *      | *     | *     | *     | *     | *     | *     | *     |
| 12-17  | *      | *     | *      | *      | *      | *      | .     | *     | *     | *     | *     | *     | *     |
| <b>18-44</b>   | 102.0  | 104.3 | 106.1  | 107.5  | 107.5  | 105.8  | 101.4 | 101.8 | 108.3 | 94.8  | 94.8  | 76.1  | 82.2  |
| 18-24  | 72.5   | 54.5  | 63.1   | 76.1   | 65.4   | 93.7   | 69.9  | 59.7  | 45.6  | 68.0  | 62.2  | *     | 52.1  |
| 25-44  | 105.1  | 109.7 | 110.7  | 110.7  | 111.9  | 107.1  | 104.8 | 106.2 | 114.5 | 97.5  | 98.3  | 81.1  | 85.3  |
| <b>45-64</b>   | 219.3  | 215.1 | 224.4  | 217.4  | 221.1  | 214.3  | 205.4 | 214.9 | 210.2 | 213.7 | 200.7 | 193.3 | 192.5 |
| 45-54  | 162.4  | 168.3 | 171.6  | 172.9  | 177.7  | 163.4  | 160.3 | 175.3 | 161.7 | 167.0 | 158.6 | 144.3 | 143.8 |
| 55-64  | 261.5  | 250.1 | 263.6  | 249.6  | 251.6  | 250.4  | 236.2 | 241.3 | 242.1 | 243.3 | 227.6 | 223.3 | 222.9 |
| <b>65+</b>   | 590.7  | 588.8 | 596.4  | 595.7  | 587.5  | 585.9  | 579.6 | 566.9 | 552.2 | 548.7 | 526.9 | 512.0 | 493.0 |
| 65-74  | 443.9  | 443.4 | 430.2  | 436.6  | 432.4  | 419.8  | 415.7 | 418.5 | 408.4 | 403.5 | 381.3 | 380.5 | 366.7 |
| 75-84  | 694.6  | 687.9 | 698.9  | 692.8  | 673.0  | 681.3  | 671.7 | 633.3 | 628.0 | 636.2 | 609.6 | 588.2 | 569.0 |
| 85+  | 1054.8 | 990.0 | 1070.9 | 1022.3 | 1008.7 | 1018.8 | 987.0 | 993.2 | 927.6 | 901.0 | 902.8 | 873.4 | 871.7 |

Data Source: Special analyses, Medicare 5 percent sample. Incident dialysis patients, unadjusted. "." Zero values in this cell; \*Values for cells with 10 or fewer patients are suppressed. Abbreviations: CKD, chronic kidney disease.

Since 2001, the rate of cardiovascular death among those on dialysis has fallen approximately 40% overall. In 2013, for the fourth consecutive year the HP2020 goal of 80.9 cardiovascular deaths per 1,000 patient years at risk was met, with a rate of 70.6 (see Table 2.17). Rates were lowest among American Indian/Alaskan Natives (55.0 deaths per 1,000) and those of two or more races (47.2 deaths per 1,000).

Cardiovascular death continued to be highest among Whites, at 81.9 deaths per 1,000 patient years. Rates were higher among males (72.2 deaths per 1,000) compared with females (68.4 deaths), although both were below the target. Large reductions in rates by age have been observed since 2001, with approximately 43% fewer deaths for patients older than 65 years occurring in 2013 (101.2 deaths per 1,000 patient years), compared with 2001 (178.5 deaths per 1,000).

**vol 2 Table 2.17 HP2020 CKD-14.3 Reduce the number of cardiovascular deaths for persons on dialysis: Target 80.9 deaths per 1,000 patient years at risk**

|  | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>All</b>   | 117.6 | 114.2 | 111.6 | 106.8 | 100.6 | 94.5  | 89.2  | 84.5  | 81.7  | 79.0  | 75.7  | 73.5  | 70.6  |
| <b>Race</b>  |       |       |       |       |       |       |       |       |       |       |       |       |       |
| American Indian or Alaskan Native only                 | 102.8 | 91.8  | 88.9  | 84.2  | 76.4  | 72.5  | 68.3  | 60.7  | 68.7  | 62.1  | 57.8  | 57.0  | 55.0  |
| Asian only   | 94.6  | 84.8  | 91.3  | 81.6  | 83.1  | 69.4  | 67.8  | 65.1  | 65.9  | 59.8  | 60.8  | 57.6  | 55.6  |
| Native Hawaiian or other Pacific Islander only~        | 99.7  | 110.5 | 102.1 | 88.0  | 76.4  | 86.2  | 80.4  | 72.0  | 79.8  | 79.3  | 66.4  | 65.3  | 61.9  |
| Black or African American only                         | 90.3  | 88.2  | 86.5  | 84.9  | 81.0  | 76.9  | 72.0  | 69.2  | 66.4  | 62.9  | 59.5  | 59.0  | 56.8  |
| White only   | 140.4 | 136.2 | 132.6 | 125.9 | 117.7 | 109.8 | 103.7 | 97.4  | 94.0  | 91.9  | 88.8  | 85.4  | 81.9  |
| Two or more races                                      |       |       |       |       | 69.5  | 71.7  | 63.7  | 67.4  | 61.7  | 64.4  | 57.1  | 49.4  | 47.2  |
| <b>Ethnicity</b>                                       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Hispanic or Latino                                     | 91.0  | 87.5  | 83.7  | 80.7  | 77.8  | 70.9  | 65.2  | 62.9  | 64.4  | 60.9  | 59.1  | 59.0  | 57.6  |
| Not Hispanic or Latino                                 | 119.1 | 116.9 | 115.5 | 110.9 | 104.4 | 98.8  | 93.6  | 88.6  | 85.2  | 82.6  | 79.2  | 76.6  | 73.4  |
| Black or African American only, not Hispanic or Latino | 90.6  | 88.3  | 86.8  | 85.0  | 81.0  | 77.0  | 72.3  | 69.3  | 66.5  | 63.1  | 59.6  | 58.9  | 56.7  |
| White only, not Hispanic or Latino                     | 152.2 | 148.1 | 145.2 | 138.1 | 128.6 | 121.1 | 115.5 | 108.6 | 104.0 | 102.7 | 99.5  | 95.7  | 91.4  |
| <b>Sex</b>   |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Male   | 116.9 | 113.6 | 111.9 | 107.7 | 101.3 | 95.6  | 90.2  | 86.2  | 83.9  | 80.8  | 77.5  | 75.5  | 72.2  |
| Female   | 118.4 | 114.9 | 111.3 | 105.7 | 99.8  | 93.3  | 88.0  | 82.4  | 79.0  | 76.7  | 73.5  | 70.8  | 68.4  |
| <b>Age</b>   |       |       |       |       |       |       |       |       |       |       |       |       |       |
| <b>&lt;18</b>  | 14.1  | 11.9  | 9.1   | 13.0  | 15.5  | 16.6  | *     | 9.4   | 15.9  | 8.5   | *     | 9.7   | *     |
| 0-4  | *     | *     | *     | *     | *     | *     | *     | *     | 45.4  | *     | *     | *     | *     |
| 5-11   | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     | .     | *     |
| 12-17  | *     | 11.8  | *     | *     | 15.7  | 13.7  | *     | *     | *     | *     | *     | *     | *     |
| <b>18-44</b>   | 40.1  | 40.6  | 39.0  | 38.0  | 37.2  | 34.9  | 32.3  | 30.5  | 30.6  | 28.9  | 26.6  | 26.9  | 25.9  |
| 18-24  | 19.9  | 19.3  | 24.3  | 24.2  | 23.6  | 18.7  | 18.1  | 16.1  | 17.9  | 18.5  | 17.9  | 13.2  | 14.1  |
| 25-44  | 41.8  | 42.4  | 40.3  | 39.1  | 38.3  | 36.3  | 33.5  | 31.7  | 31.7  | 29.7  | 27.3  | 27.9  | 26.9  |
| <b>45-64</b>   | 88.9  | 85.7  | 83.9  | 80.4  | 75.3  | 72.8  | 67.8  | 64.7  | 63.0  | 60.4  | 58.4  | 56.9  | 54.7  |
| 45-54  | 72.3  | 68.9  | 66.0  | 63.6  | 60.7  | 59.2  | 56.3  | 52.7  | 51.4  | 47.2  | 47.6  | 44.8  | 43.4  |
| 55-64  | 103.1 | 99.8  | 98.6  | 94.0  | 86.6  | 83.3  | 76.5  | 73.6  | 71.5  | 69.7  | 65.8  | 65.1  | 62.1  |
| <b>65+</b>   | 178.5 | 172.3 | 167.6 | 159.6 | 150.1 | 138.9 | 132.1 | 124.5 | 119.2 | 115.6 | 110.6 | 106.1 | 101.2 |
| 65-74  | 149.5 | 143.0 | 138.3 | 132.6 | 123.9 | 114.0 | 107.4 | 103.4 | 100.2 | 95.7  | 92.1  | 88.8  | 85.7  |
| 75-84  | 205.0 | 195.7 | 190.4 | 179.9 | 170.1 | 155.6 | 149.6 | 137.9 | 130.0 | 128.4 | 122.1 | 115.6 | 111.5 |
| 85+  | 277.5 | 278.8 | 265.6 | 244.6 | 225.4 | 214.3 | 199.6 | 187.2 | 178.6 | 171.8 | 163.1 | 161.0 | 146.5 |

Data Source: Special analyses, Medicare 5 percent sample. Period prevalent dialysis patients; unadjusted. \*Values for cells with 10 or fewer patients are suppressed. Abbreviations: CKD, chronic kidney disease.

The total death rate for patients with a functioning transplant has slowly declined since 2001, although in 2013 it still remained slightly above the HP2020 target at 31.8 deaths per 1,000 patient years at risk (Table 2.18). Rates were highest among American Indian/Alaskan Natives (36.6 per 1,000) and Whites (33.0 per 1,000), and lowest among Asians (18.8 per 1,000). With

respect to sex, rates were higher among males (33.6 deaths per 1,000 patient years) compared with females (29.2 deaths per 1,000). Death rates for patients with functioning transplants were highest among those aged 65 and older, at 73.4 deaths per 1,000 patient years compared with those aged 18-44, at 7.6.

**vol 2 Table 2.18 HP2020 CKD-14.4 Reduce the total number of deaths for persons with a functioning kidney transplant: Target 29.3 deaths per 1,000 patient years at risk**

|  | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>All</b>   | 34.2  | 32.2  | 33.4  | 32.0  | 32.5  | 31.9  | 31.5  | 30.3  | 31.7  | 31.7  | 31.8  | 31.9  | 31.8  |
| <b>Race</b>  |       |       |       |       |       |       |       |       |       |       |       |       |       |
| American Indian or Alaskan Native only                 | 40.5  | 36.6  | 42.1  | 41.1  | 40.8  | 45.0  | 37.8  | 38.7  | 57.0  | 48.3  | 44.4  | 43.5  | 36.6  |
| Asian only   | 21.5  | 21.2  | 18.3  | 20.5  | 22.6  | 19.3  | 24.0  | 19.4  | 16.7  | 17.4  | 22.0  | 22.9  | 18.8  |
| Native Hawaiian or other Pacific Islander only~        | *     | 25.2  | *     | 19.2  | 24.7  | 17.3  | 13.2  | 17.0  | 25.0  | 17.7  | 18.2  | 20.3  | 26.0  |
| Black or African American only                         | 38.6  | 36.3  | 37.6  | 34.0  | 34.7  | 34.1  | 30.5  | 31.2  | 30.8  | 30.5  | 31.3  | 30.7  | 30.4  |
| White only   | 34.0  | 32.0  | 33.4  | 32.3  | 32.7  | 32.2  | 32.5  | 30.8  | 32.7  | 32.9  | 32.7  | 32.9  | 33.0  |
| Two or more races                                      |       |       |       |       | 22.7  | 20.6  | 15.6  | 24.0  | 23.8  | 23.4  | 24.7  | 27.1  | 32.2  |
| <b>Ethnicity</b>                                       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Hispanic or Latino                                     | 22.3  | 20.8  | 19.3  | 18.8  | 22.6  | 23.3  | 20.9  | 21.6  | 23.6  | 23.7  | 23.6  | 23.5  | 25.1  |
| Not Hispanic or Latino                                 | 30.0  | 28.9  | 31.9  | 30.6  | 30.8  | 30.3  | 30.9  | 29.7  | 31.1  | 31.7  | 32.4  | 33.2  | 33.0  |
| Black or African American only, not Hispanic or Latino | 39.1  | 36.7  | 37.9  | 34.3  | 35.1  | 34.5  | 30.7  | 31.6  | 30.7  | 30.7  | 31.4  | 31.0  | 30.3  |
| White only, not Hispanic or Latino                     | 35.3  | 33.3  | 35.2  | 34.2  | 34.1  | 33.4  | 34.3  | 32.3  | 34.4  | 34.5  | 34.5  | 34.8  | 34.9  |
| <b>Sex</b>   |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Male   | 36.5  | 33.9  | 34.6  | 34.2  | 35.0  | 33.8  | 33.5  | 32.0  | 33.2  | 33.8  | 34.1  | 34.0  | 33.6  |
| Female   | 30.8  | 29.8  | 31.7  | 28.9  | 29.0  | 29.2  | 28.4  | 27.8  | 29.5  | 28.6  | 28.5  | 29.0  | 29.2  |
| <b>Age</b>   |       |       |       |       |       |       |       |       |       |       |       |       |       |
| <b>&lt;18</b>  | 4.8   | 8.5   | 6.7   | 3.6   | 7.6   | 4.7   | *     | *     | 3.0   | 6.3   | 2.9   | 2.6   | *     |
| 0-4  | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     |
| 5-11   | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     | *     |
| 12-17  | *     | 7.3   | 6.6   | *     | 8.6   | 5.0   | *     | *     | *     | 6.2   | *     | *     | *     |
| <b>18-44</b>   | 15.4  | 14.4  | 12.7  | 12.5  | 12.2  | 11.7  | 10.9  | 10.0  | 10.1  | 9.2   | 8.5   | 8.1   | 7.6   |
| 18-24  | 9.7   | 5.2   | 5.6   | 7.0   | 7.3   | 8.2   | 6.7   | 6.4   | 6.3   | 6.1   | 4.2   | 5.5   | 5.1   |
| 25-44  | 16.0  | 15.4  | 13.4  | 13.1  | 12.8  | 12.1  | 11.4  | 10.4  | 10.5  | 9.5   | 9.0   | 8.5   | 7.9   |
| <b>45-64</b>   | 39.7  | 35.6  | 36.6  | 33.3  | 33.7  | 32.3  | 30.3  | 28.9  | 28.8  | 28.1  | 28.1  | 25.9  | 25.6  |
| 45-54  | 30.8  | 28.3  | 27.4  | 24.7  | 25.6  | 24.9  | 22.2  | 21.9  | 22.4  | 19.8  | 19.1  | 16.6  | 16.9  |
| 55-64  | 52.3  | 45.5  | 48.3  | 43.7  | 43.0  | 40.4  | 38.8  | 36.0  | 35.1  | 35.9  | 36.2  | 34.0  | 33.2  |
| <b>65+</b>   | 91.7  | 85.9  | 91.0  | 87.1  | 83.6  | 79.8  | 80.0  | 73.3  | 77.0  | 75.4  | 74.2  | 76.7  | 73.4  |
| 65-74  | 85.9  | 80.5  | 82.2  | 78.9  | 76.4  | 70.5  | 71.3  | 63.8  | 66.9  | 65.7  | 63.4  | 64.7  | 61.2  |
| 75-84  | 137.7 | 126.5 | 153.2 | 138.0 | 124.2 | 130.3 | 122.0 | 117.0 | 121.3 | 113.6 | 115.3 | 120.0 | 117.3 |
| 85+  | *     | *     | *     | *     | 182.9 | 134.9 | 211.2 | 146.8 | 152.4 | 196.1 | 169.4 | 225.2 | 192.3 |

Data Source: Special analyses, Medicare 5 percent sample. Period prevalent transplant patients, unadjusted. \*Values for cells with 10 or fewer patients are suppressed. Abbreviations: CKD, chronic kidney disease.

The rate of cardiovascular mortality among transplant patients has fallen by 49% since 2001, and continued to meet the HP2020 target of 4.5 deaths per 1,000 patients, declining to three deaths per 1,000 in 2013 (see Table 2.19). Rates were lowest among Whites, at

2.9 deaths per 1,000 patients; and slightly lower among Hispanics/Latinos at 2.3. Rates were higher among males, at 3.3 deaths per 1,000 patients, compared to females, at 2.5, although both remained below the target.

**vol 2 Table 2.19 HP2020 CKD-14.5 Reduce the number of cardiovascular deaths in persons with a functioning kidney transplant: Target 4.5 deaths per 1,000 patient years at risk**

|  | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>All</b>   | 5.9  | 5.3  | 5.4  | 5.8  | 5.7  | 5.4  | 5.3  | 4.3  | 4.4  | 4.4  | 3.7  | 3.5  | 3.0  |
| <b>Race</b>  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| American Indian or Alaskan Native only                 | *    | 9.4  | *    | *    | *    | *    | *    | *    | *    | *    | *    | *    | *    |
| Asian only   | *    | 3.6  | *    | 2.6  | 3.1  | 3.7  | 3.6  | 1.9  | *    | 1.8  | 2.1  | 2.4  | *    |
| Native Hawaiian or other Pacific Islander only~        | *    | *    | *    | *    | *    | *    | *    | *    | *    | *    | .    | *    | *    |
| Black or African American only                         | 7.2  | 6.3  | 6.5  | 6.3  | 6.1  | 6.2  | 5.5  | 5.1  | 5.2  | 5.0  | 4.4  | 4.0  | 3.4  |
| White only   | 5.7  | 5.1  | 5.4  | 5.9  | 5.7  | 5.3  | 5.4  | 4.2  | 4.3  | 4.4  | 3.7  | 3.5  | 2.9  |
| Two or more races                                      |      |      |      |      | *    | 4.8  | *    | *    | 4.1  | *    | *    | *    | 4.0  |
| <b>Ethnicity</b>                                       |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Hispanic or Latino                                     | 3.7  | 4.5  | 3.4  | 3.5  | 3.9  | 4.1  | 3.3  | 3.4  | 3.5  | 3.0  | 3.3  | 2.3  | 2.3  |
| Not Hispanic or Latino                                 | 5.7  | 5.2  | 5.6  | 5.6  | 5.6  | 5.3  | 5.3  | 4.3  | 4.4  | 4.7  | 3.8  | 3.8  | 3.2  |
| Black or African American only, not Hispanic or Latino | 7.4  | 6.3  | 6.6  | 6.4  | 6.2  | 6.3  | 5.6  | 5.2  | 5.2  | 4.9  | 4.3  | 4.0  | 3.4  |
| White only, not Hispanic or Latino                     | 6.0  | 5.2  | 5.6  | 6.3  | 5.9  | 5.4  | 5.7  | 4.3  | 4.5  | 4.7  | 3.7  | 3.7  | 3.1  |
| <b>Sex</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Male   | 6.4  | 5.8  | 5.7  | 6.5  | 6.1  | 5.7  | 6.0  | 4.8  | 4.4  | 4.9  | 4.1  | 3.6  | 3.3  |
| Female   | 5.1  | 4.7  | 5.0  | 4.9  | 5.1  | 4.9  | 4.2  | 3.6  | 4.3  | 3.7  | 3.0  | 3.3  | 2.5  |
| <b>Age</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |
| <b>&lt;18</b>  | *    | *    | *    | .    | *    | *    | *    | *    | .    | *    | .    | *    | .    |
| 0-4  | *    | *    | .    | .    | .    | .    | *    | .    | .    | *    | .    | .    | .    |
| 5-11   | *    | .    | *    | .    | .    | .    | .    | .    | .    | .    | .    | .    | .    |
| 12-17  | *    | *    | *    | .    | *    | *    | *    | *    | .    | *    | .    | *    | .    |
| <b>18-44</b>   | 2.6  | 2.7  | 2.4  | 2.5  | 2.4  | 2.1  | 2.1  | 1.8  | 1.4  | 1.3  | 1.0  | 1.2  | 1.2  |
| 18-24  | *    | *    | *    | *    | *    | *    | *    | *    | *    | *    | *    | *    | *    |
| 25-44  | 2.8  | 2.9  | 2.5  | 2.7  | 2.5  | 2.2  | 2.2  | 1.9  | 1.5  | 1.4  | 1.0  | 1.2  | 1.3  |
| <b>45-64</b>   | 7.1  | 6.0  | 6.1  | 6.4  | 5.9  | 5.8  | 5.3  | 4.3  | 4.1  | 4.2  | 3.5  | 2.9  | 2.6  |
| 45-54  | 6.6  | 4.5  | 5.0  | 5.4  | 4.6  | 4.4  | 4.4  | 3.4  | 3.4  | 2.9  | 2.3  | 2.0  | 1.9  |
| 55-64  | 7.8  | 7.9  | 7.5  | 7.6  | 7.4  | 7.3  | 6.2  | 5.2  | 4.8  | 5.5  | 4.6  | 3.7  | 3.2  |
| <b>65+</b>   | 13.9 | 12.9 | 13.2 | 14.1 | 13.9 | 12.1 | 12.2 | 8.9  | 10.2 | 9.6  | 8.0  | 7.8  | 5.9  |
| 65-74  | 13.7 | 11.6 | 11.7 | 13.3 | 13.4 | 10.4 | 10.9 | 8.3  | 8.9  | 8.9  | 7.6  | 6.7  | 5.4  |
| 75-84  | 15.1 | 22.5 | 24.2 | 19.4 | 16.2 | 22.0 | 18.4 | 11.9 | 16.5 | 12.2 | 9.1  | 12.3 | 8.1  |
| 85+  | *    | *    | .    | *    | *    | .    | *    | *    | *    | *    | *    | *    | *    |

Data Source: Special analyses, Medicare 5 percent sample. Period prevalent transplant patients, unadjusted. "." Zero values in this cell; \*Values for cells with 10 or fewer patients are suppressed. Abbreviations: CKD, chronic kidney disease.

## References

- Centers for Medicare & Medicaid Services. 2007  
Annual Report, End Stage Renal Disease Clinical  
Performance Measures Project. Department of  
Health and Human Services, Centers for Medicare  
& Medicaid Services, Office of Clinical Standards &  
Quality, Baltimore, Maryland, December 2007.
- Healthy People 2020. About Healthy People. Website.  
©2010-2014. Retrieved October 4, 2015 from [http://  
www.healthypeople.gov/2020/about/default.aspx](http://www.healthypeople.gov/2020/about/default.aspx) .
- U.S. Renal Data System, USRDS 2013 Annual Data  
Report: Atlas of Chronic Kidney Disease and End-  
Stage Renal Disease in the United States, National  
Institutes of Health, National Institute of Diabetes  
and Digestive and Kidney Diseases, Bethesda, MD,  
2013.

## Notes