

## CHAPTER 6

# Chronic Kidney Disease (CKD)

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### Lead Agencies

Centers for Disease Control and Prevention  
National Institutes of Health

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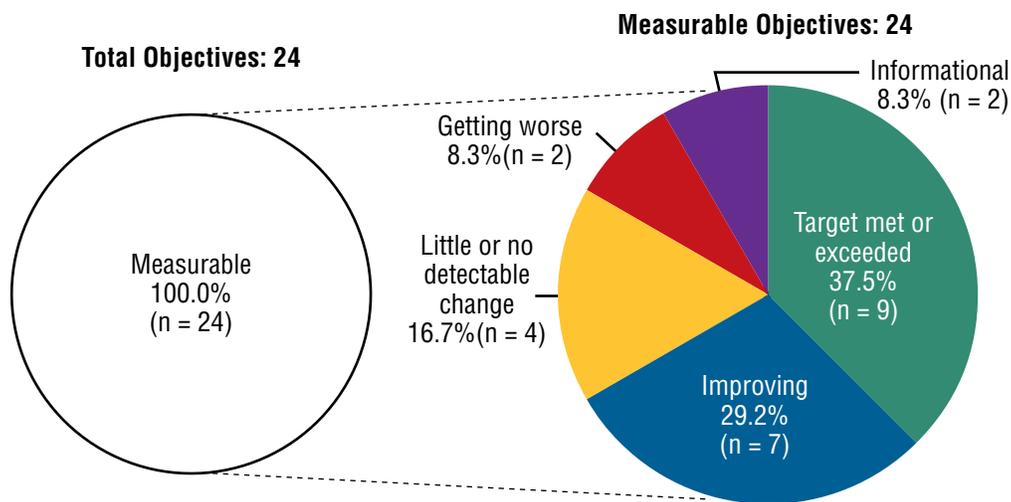
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## Goal: Reduce new cases of chronic kidney disease (CKD) and its complications, disability, death, and economic costs.

This chapter includes objectives that monitor the incidence, prevalence, and mortality from chronic kidney disease and end-stage renal disease; cardiovascular care for persons with chronic kidney disease; and recommended medical evaluation and treatment for patients with chronic kidney disease. The *Reader's Guide* provides a step-by-step explanation of the content of this chapter, including criteria for highlighting objectives in the Selected Findings.<sup>1</sup>

### Status of Objectives

Figure 6-1. Midcourse Status of the Chronic Kidney Disease Objectives



All 24 objectives in the Chronic Kidney Disease Topic Area were measurable<sup>2</sup> (Figure 6-1, Table 6-1). The midcourse status of these objectives (Table 6-2) was as follows:

- 9 objectives had met or exceeded their 2020 targets,<sup>3</sup>
- 7 objectives were improving,<sup>4</sup>
- 4 objectives had demonstrated little or no detectable change,<sup>5</sup>
- 2 objectives were getting worse,<sup>6</sup> and
- 2 objectives were informational.<sup>7</sup>

### Selected Findings

#### Prevalence and Awareness of Chronic Kidney Disease (CKD)

- From 2001–2006 to 2007–2012 there was little or no detectable change in the age-adjusted proportion of **persons aged 18 and over with CKD** (CKD-1: 14.8% and 14.6%, respectively) and in the age-adjusted

proportion of **persons aged 45 and over with CKD who knew that they had impaired renal function** (CKD-2: 9.4% and 8.4%, respectively) (Table 6-2).

- » In 2007–2012, there were statistically significant disparities by sex, race and ethnicity, education, family income, and disability status in the age-adjusted proportion of adults with CKD (CKD-1, Table 6-3).
- » In 2007–2012, there were statistically significant disparities by sex and disability status in the age-adjusted proportion of persons aged 45 and over with CKD who knew they had impaired renal function (CKD-2, Table 6-3). Disparities by race and ethnicity, education, and family income were not statistically significant.

## Recommended Medical Evaluation and Treatment of Persons With CKD

- The proportion of **hospital patients aged 65 and over with acute kidney injury who had a follow-up renal evaluation within 6 months post discharge** (CKD-3) increased from 11.2% in 2007 to 13.2% in 2012, exceeding the 2020 target (Table 6-2).
  - » In 2012, there was a statistically significant disparity by sex in the proportion of hospital patients aged 65 and over with acute kidney injury who had a renal evaluation within 6 months post discharge (CKD-3, Table 6-3). The disparity by race and ethnicity was not statistically significant.
- Between 2007 and 2012, the proportion of **persons aged 65 and over with CKD who received a recommended medical evaluation including serum creatinine, lipids, and microalbuminuria** (CKD-4.1) increased from 25.7% to 31.2%, exceeding the 2020 target (Table 6-2).
  - » In 2012, there were statistically significant disparities by sex and race and ethnicity in the proportion of persons aged 65 and over with CKD who received a medical evaluation with serum creatinine, lipids, and microalbuminuria (CKD-4.1, Table 6-3).
- Between 2007 and 2012, the proportion of **persons aged 65 and over with type 1 or type 2 diabetes and CKD who received a medical evaluation with serum creatinine, microalbuminuria, A1c, lipids, and eye examination** (CKD-4.2) increased from 23.0% to 27.7%, exceeding the 2020 target (Table 6-2).
  - » In 2012, there was a statistically significant disparity by race and ethnicity in the proportion of persons aged 65 and over with type 1 or 2 diabetes and CKD who received medical evaluation with serum creatinine, microalbuminuria, A1c, lipids, and eye examination (CKD-4.2, Table 6-3). The disparity by sex was not statistically significant.
- The proportion of **persons aged 65 and over with diabetes and CKD who received recommended treatment with angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers (ARBs)** (CKD-5) decreased from 73.6% in 2007 to 71.7% in 2011, moving away from the baseline and 2020 target (Table 6-2).
  - » In 2011, there were statistically significant disparities by sex and race and ethnicity in the proportion of persons aged 65 and over with

diabetes and CKD who received recommended treatment with ACE inhibitors and/or ARBs (CKD-5, Table 6-3).

- The proportion of **CKD patients who were under a nephrologist's care 12 or more months prior to beginning renal replacement therapy** (CKD-10) increased from 27.3% in 2007 to 33.1% in 2012, exceeding the 2020 target (Table 6-2).
  - » In 2012, there was a statistically significant disparity by race and ethnicity in the proportion of CKD patients who were under a nephrologist's care 12 or more months prior to beginning renal replacement therapy (CKD-10, Table 6-3). The disparity by sex was not statistically significant.

## Cardiovascular Care of Persons With CKD

- From 2001–2006 to 2007–2012, there was little or no detectable change in the age-adjusted proportion of **persons aged 18 and over with CKD who had hypertension** (CKD-6.1: 22.7% and 24.0%, respectively) or in the age-adjusted proportion of **persons aged 50 and over with CKD who took statins to lower their blood cholesterol level** (CKD-6.2: 21.6% and 21.9%, respectively) (Table 6-2).
  - » In 2007–2012, there was a statistically significant disparity by family income in the age-adjusted proportion of persons with CKD who had hypertension (CKD-6.1, Table 6-3). Disparities by sex, race and ethnicity, education, and disability status were not statistically significant.
  - » In 2007–2012, disparities by sex, race and ethnicity, education, family income, and disability status in the age-adjusted proportion of persons aged 50 and over with CKD who took statins to lower their blood cholesterol level (CKD-6.2) were not statistically significant (Table 6-3).

## Mortality Among Persons With CKD

- The age-adjusted rate of **deaths among persons aged 18 and over with CKD** (CKD-7) was 22.2 per 1,000 person years of follow-up in 1999–2004 and 20.1 in 2005–2010. A target was not set for this objective (Table 6-2).
  - » In 2005–2010, there were statistically significant disparities by education and family income in the age-adjusted death rate among adults with CKD (CKD-7, Table 6-3). Disparities by sex and race and ethnicity were not statistically significant.

## Incidence of End-stage Renal Disease (ESRD)

- Between 2007 and 2012, the rate of **new cases of ESRD (CKD-8)** decreased from 386.3 to 359.2 per million population (adjusted for age, sex, and race and ethnicity) and the rate of **new cases of kidney failure due to diabetes (CKD-9.1)** decreased from 168.7 to 154.0 per million population (adjusted for age, sex, and race and ethnicity), moving toward their respective 2020 targets (Table 6-2).
  - » In 2012, the rate of new cases of ESRD (CKD-8) varied by state. Seven states (Alaska, Colorado, Hawaii, Montana, New Mexico, Washington, and Wyoming) had met or exceeded the national 2020 target (Map 6-1).
  - » In 2012, there were statistically significant disparities by sex (adjusted for age and race and ethnicity) and race and ethnicity (adjusted for age and sex) in the rates of new cases of ESRD (CKD-8) and new cases of kidney failure due to diabetes (CKD-9.1) (Table 6-3).
- Between 2007 and 2012, the rate of **new cases of kidney failure due to diabetes among persons with diabetes (CKD-9.2)** decreased from 2,618.0 to 2,245.0 per million persons with diabetes (adjusted for age, sex, and race and ethnicity), exceeding the 2020 target (Table 6-2).
  - » In 2012, there were statistically significant disparities by sex (adjusted for age and race and ethnicity) and race and ethnicity (adjusted for age and sex) in the rate of new cases of kidney failure due to diabetes among persons with diabetes (CKD-9.2, Table 6-3).

## Vascular Access

- From 2007 to 2011, the proportion of **all patients on hemodialysis aged 18 and over who used arteriovenous fistulas as the primary vascular access mode (CKD-11.1)** increased from 46.0% to 49.6%, moving toward the 2020 target (Table 6-2).
  - » In 2012, there were statistically significant disparities by sex and race and ethnicity in the proportion of hemodialysis patients aged 18 and over who used arteriovenous fistulas as the primary vascular access mode (CKD-11.1, Table 6-3).
- From 2006 to 2007, the proportion of **all patients on hemodialysis aged 18 and over who used catheters as the only vascular access mode (CKD-11.2)** decreased from 29.0% to 27.7%, moving toward the 2020 target (Table 6-2).

- » In 2012, there were statistically significant disparities by sex and race and ethnicity in the proportion of hemodialysis patients aged 18 and over who used catheters as the only vascular access mode (CKD-11.2, Table 6-3).
- The proportion of **patients newly starting dialysis who used arteriovenous fistulas or had a maturing fistulas as the primary mode of vascular access at the start of renal replacement therapy (CKD-11.3)** increased from 31.8% in 2007 to 36.8% in 2012, exceeding the 2020 target (Table 6-2).
  - » The proportion of new hemodialysis patients aged 18 and over who used arteriovenous fistulas as the primary vascular access mode (CKD-11.3) varied by state. In 2012, 39 states had met or exceeded the national 2020 target (Map 6-2).
  - » In 2012, there was a statistically significant disparity by sex in the proportion of new hemodialysis patients aged 18 and over who used arteriovenous fistulas as the primary vascular access mode (CKD-11.3, Table 6-3). The disparity by race and ethnicity was not statistically significant.

## Kidney Transplants

- The proportion of **dialysis patients under age 70 who were on the wait list for or had received a kidney transplant within 1 year of ESRD start (CKD-12)** increased from 17.0% in 2006 to 17.7% in 2011, moving toward the 2020 target (Table 6-2).
  - » In 2011, there were statistically significant disparities by sex and race and ethnicity in the proportion of dialysis patients under age 70 who were on the wait list for or had received a kidney transplant within 1 year of ESRD start (CKD-12, Table 6-3).
- The proportion of **patients under age 70 who had received a kidney transplant within 3 years of ESRD start (CKD-13.1)** declined from 18.3% in 2004 to 14.7% in 2009, moving away from the baseline and 2020 target (Table 6-2).
  - » In 2009, there were statistically significant disparities by sex and race and ethnicity in the proportion of persons under age 70 who had received a kidney transplant within 3 years of ESRD start (CKD-13.1, Table 6-3).
- The proportion of **patients under age 70 who had received a preemptive kidney transplant at the start of ESRD (CKD-13.2)** was 4.0% in 2007 and 3.7% in 2012. A target was not set for this objective (Table 6-2).

- » In 2012, there were statistically significant disparities by sex and race and ethnicity in the proportion of persons under age 70 who had received a preemptive kidney transplant at the start of ESRD (CKD-13.2, Table 6-3).

## Mortality Among Persons on Dialysis or With a Kidney Transplant

- Between 2007 and 2012, the **death rate among persons on dialysis** (CKD-14.1) decreased from 214.7 to 181.4 deaths per 1,000 patient years at risk; the **death rate of persons on dialysis in the first 3 months of renal replacement therapy** (CKD-14.2) decreased from 365.6 to 311.8 per 1,000 patient years at risk; and the **cardiovascular disease death rate among persons on dialysis** (CKD-14.3) decreased from 92.4 to 75.5 per 1,000 patient years at risk, exceeding their respective 2020 targets (Table 6-2).
  - » Total death rates among persons on dialysis (CKD-14.1) varied by state. In 2012, 30 states and the District of Columbia had met or exceeded the national target (Map 6-3).
  - » In 2012, there was a statistically significant disparity by race and ethnicity in the rate of total deaths among persons on dialysis (CKD-14.1) and in the rate of deaths of persons on dialysis in the first 3 months of renal replacement therapy (CKD-14.2) (Table 6-3). The disparity by sex was not statistically significant for either objective.
  - » In 2012, there were statistically significant disparities by sex and race and ethnicity in the rate of cardiovascular deaths among persons on dialysis (CKD-14.3, Table 6-3).
- Between 2007 and 2012, the **death rate among persons with a functioning kidney transplant** (CKD-14.4) decreased from 30.1 to 27.2 deaths per 1,000 patient years at risk, and the **cardiovascular disease death rate among persons with a functioning kidney transplant** (CKD-14.5) decreased from 4.9 to 3.3 per 1,000 patient years at risk, moving toward their respective 2020 targets (Table 6-2).
  - » In 2012, there were statistically significant disparities by sex and race and ethnicity in the rate of total deaths among persons with a functioning kidney transplant (CKD-14.4, Table 6-3).
  - » In 2012, there was a statistically significant disparity by race and ethnicity in the rate of cardiovascular disease deaths among persons with a functioning kidney transplant (CKD-14.5, Table 6-3). The disparity by sex was not statistically significant.

## More Information

Readers interested in more detailed information about the objectives in this topic area are invited to visit the [HealthyPeople.gov](http://www.healthypeople.gov) website, where extensive substantive and technical information is available:

- For the background and importance of the topic area, see: <http://www.healthypeople.gov/2020/topics-objectives/topic/chronic-kidney-disease>
- For data details for each objective, including definitions, numerators, denominators, calculations, and data limitations, see: <http://www.healthypeople.gov/2020/topics-objectives/topic/chronic-kidney-disease/objectives>  
*Select an objective, then click on the “Data Details” icon.*
- For objective data by population group (e.g., sex, race and ethnicity, or family income), including rates, percentages, or counts for multiple years, see: <http://www.healthypeople.gov/2020/topics-objectives/topic/chronic-kidney-disease/objectives>  
*Select an objective, then click on the “Data2020” icon.*

Data for the measurable objectives in this chapter were from the following data sources:

- Clinical Performance Measures Project: <https://www.cms.gov/Medicare/End-Stage-Renal-Disease/CPMProject/index.html?redirect=/cpmproject>
- National Death Index: <http://www.cdc.gov/nchs/ndi/index.htm>
- National Health and Nutrition Examination Survey: <http://www.cdc.gov/nchs/nhanes/>
- National Health Interview Survey: <http://www.cdc.gov/nchs/nhis/>
- United States Renal Data System: <https://www.usrds.org/>

## Footnotes

<sup>1</sup>The **Technical Notes** provide more information on Healthy People 2020 statistical methods and issues.

<sup>2</sup>**Measurable** objectives had a national baseline value.

<sup>3</sup>**Target met or exceeded**—One of the following, as specified in the Midcourse Progress Table:

- » At baseline the target was not met or exceeded and the midcourse value was equal to or exceeded the target. (The percentage of targeted change achieved was equal to or greater than 100%.)
- » The baseline and midcourse values were equal to or exceeded the target. (The percentage of targeted change achieved was not assessed.)

<sup>4</sup>**Improving**—One of the following, as specified in the Midcourse Progress Table:

- » Movement was toward the target, standard errors were available, and the percentage of targeted change achieved was statistically significant.
- » Movement was toward the target, standard errors were not available, and the objective had achieved 10% or more of the targeted change.

<sup>5</sup>**Little or no detectable change**—One of the following, as specified in the Midcourse Progress Table:

- » Movement was toward the target, standard errors were available, and the percentage of targeted change achieved was not statistically significant.
- » Movement was toward the target, standard errors were not available, and the objective had achieved less than 10% of the targeted change.
- » Movement was away from the baseline and target, standard errors were available, and the percentage change relative to the baseline was not statistically significant.
- » Movement was away from the baseline and target, standard errors were not available, and the objective had moved less than 10% relative to the baseline.
- » There was no change between the baseline and the midcourse data point.

<sup>6</sup>**Getting worse**—One of the following, as specified in the Midcourse Progress Table:

- » Movement was away from the baseline and target, standard errors were available, and the percentage change relative to the baseline was statistically significant.
- » Movement was away from the baseline and target, standard errors were not available, and the objective had moved 10% or more relative to the baseline.

<sup>7</sup>**Informational**—A target was not set for this objective, so progress toward target attainment could not be assessed.

## Suggested Citation

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National Center for Health Statistics. Chapter 6: Chronic Kidney Disease. Healthy People 2020 Midcourse Review. Hyattsville, MD. 2016.

**Table 6–1. Chronic Kidney Disease Objectives**

LEGEND

-  Data for this objective are available in this chapter’s Midcourse Progress Table.
-  Disparities data for this objective are available, and this chapter includes a Midcourse Health Disparities Table.
-  A state or county level map for this objective is available at the end of the chapter.

Not Applicable Midcourse data availability is not applicable for developmental and archived objectives. Developmental objectives did not have a national baseline value. Archived objectives are no longer being monitored due to lack of data source, changes in science, or replacement with other objectives.

Objective Number	Objective Statement	Data Sources	Midcourse Data Availability	
CKD-1	Reduce the proportion of the U.S. population with chronic kidney disease	National Health and Nutrition Examination Survey (NHANES), CDC/NCHS		
CKD-2	Increase the proportion of persons with chronic kidney disease (CKD) who know they have impaired renal function	National Health and Nutrition Examination Survey (NHANES), CDC/NCHS		
CKD-3	Increase the proportion of hospital patients who incurred acute kidney injury who have followup renal evaluation in 6 months post discharge	United States Renal Data System (USRDS), NIH/NIDDK		
CKD-4.1	Increase the proportion of persons with chronic kidney disease who receive medical evaluation with serum creatinine, lipids, and microalbuminuria	United States Renal Data System (USRDS), NIH/NIDDK		
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	United States Renal Data System (USRDS), NIH/NIDDK		
CKD-5	Increase the proportion of persons with diabetes and chronic kidney disease who receive recommended medical treatment with angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers (ARBs)	United States Renal Data System (USRDS), NIH/NIDDK		
CKD-6.1	Reduce the proportion of persons with chronic kidney disease who have elevated blood pressure	National Health and Nutrition Examination Survey (NHANES), CDC/NCHS		
CKD-6.2	Increase the proportion of persons aged 50 years and older with chronic kidney disease who currently take statins to lower their blood cholesterol	National Health and Nutrition Examination Survey (NHANES), CDC/NCHS		
CKD-7	Reduce the number of deaths among persons with chronic kidney disease	National Death Index (NDI), CDC/NCHS; National Health and Nutrition Examination Survey (NHANES), CDC/NCHS		
CKD-8	Reduce the number of new cases of end-stage renal disease (ESRD)	United States Renal Data System (USRDS), NIH/NIDDK		 

**Table 6-1. Chronic Kidney Disease Objectives—Continued**

## LEGEND

	Data for this objective are available in this chapter's Midcourse Progress Table.		Disparities data for this objective are available, and this chapter includes a Midcourse Health Disparities Table.		A state or county level map for this objective is available at the end of the chapter.
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-right: 10px;">Not Applicable</div> Midcourse data availability is not applicable for developmental and archived objectives. Developmental objectives did not have a national baseline value. Archived objectives are no longer being monitored due to lack of data source, changes in science, or replacement with other objectives.					

Objective Number	Objective Statement	Data Sources	Midcourse Data Availability		
CKD-9.1	Reduce kidney failure due to diabetes	United States Renal Data System (USRDS), NIH/NIDDK			
CKD-9.2	Reduce kidney failure due to diabetes among persons with diabetes	United States Renal Data System (USRDS), NIH/NIDDK; National Health Interview Survey (NHIS), CDC/NCHS			
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	United States Renal Data System (USRDS), NIH/NIDDK			
CKD-11.1	Increase the proportion of adult hemodialysis patients who use arteriovenous fistulas as the primary mode of vascular access	Clinical Performance Measures Project (CPM), CMS; United States Renal Data System (USRDS), NIH/NIDDK			
CKD-11.2	Reduce the proportion of adult hemodialysis patients who use catheters as the only mode of vascular access	Clinical Performance Measures Project (CPM), CMS; United States Renal Data System (USRDS), NIH/NIDDK			
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	Clinical Performance Measures Project (CPM), CMS; United States Renal Data System (USRDS), NIH/NIDDK			
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)	United States Renal Data System (USRDS), NIH/NIDDK			
CKD-13.1	Increase the proportion of patients receiving a kidney transplant within 3 years of end-stage renal disease (ESRD)	United States Renal Data System (USRDS), NIH/NIDDK			
CKD-13.2	Increase the proportion of patients who receive a preemptive transplant at the start of ESRD	United States Renal Data System (USRDS), NIH/NIDDK			
CKD-14.1	Reduce the total number of deaths for persons on dialysis	United States Renal Data System (USRDS), NIH/NIDDK			

**Table 6–1. Chronic Kidney Disease Objectives—Continued**

## LEGEND



Data for this objective are available in this chapter's Midcourse Progress Table.



Disparities data for this objective are available, and this chapter includes a Midcourse Health Disparities Table.



A state or county level map for this objective is available at the end of the chapter.

Not Applicable

Midcourse data availability is not applicable for developmental and archived objectives. Developmental objectives did not have a national baseline value. Archived objectives are no longer being monitored due to lack of data source, changes in science, or replacement with other objectives.

Objective Number	Objective Statement	Data Sources	Midcourse Data Availability
CKD-14.2	Reduce the number of deaths in dialysis patients within the first 3 months of initiation of renal replacement therapy	United States Renal Data System (USRDS), NIH/NIDDK	
CKD-14.3	Reduce the number of cardiovascular deaths for persons on dialysis	United States Renal Data System (USRDS), NIH/NIDDK	
CKD-14.4	Reduce the total number of deaths for persons with a functioning kidney transplant	United States Renal Data System (USRDS), NIH/NIDDK	
CKD-14.5	Reduce the number of cardiovascular deaths in persons with a functioning kidney transplant	United States Renal Data System (USRDS), NIH/NIDDK	

**Table 6–2. Midcourse Progress for Measurable<sup>1</sup> Chronic Kidney Disease Objectives**

## LEGEND

 Target met or exceeded <sup>2,3</sup>	 Improving <sup>4,5</sup>	 Little or no detectable change <sup>6–10</sup>	 Getting worse <sup>11,12</sup>	 Baseline only <sup>13</sup>	 Informational <sup>14</sup>
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	Objective Description	Baseline Value (Year)	Midcourse Value (Year)	Target	Movement Toward Target <sup>15</sup>	Movement Away From Baseline <sup>16</sup>	Movement Statistically Significant <sup>17</sup>
 <sup>6</sup>	<b>CKD-1</b> Persons with chronic kidney disease (age-adjusted, percent, 18+ years)	14.8% (2001–2006)	14.6% (2007–2012)	13.3%	13.3%		No
 <sup>8</sup>	<b>CKD-2</b> Persons with chronic kidney disease who know they have impaired renal function (age-adjusted, percent, 45+ years)	9.4% (2001–2006)	8.4% (2007–2012)	13.4%		10.6%	No
 <sup>2</sup>	<b>CKD-3</b> Hospital patients with acute kidney injury who have renal evaluation within 6 months post discharge (percent, 65+ years)	11.2% (2007)	13.2% (2012)	12.3%	181.8%		Yes
 <sup>2</sup>	<b>CKD-4.1</b> Persons with chronic kidney disease receiving medical evaluation (percent, 65+ years)	25.7% (2007)	31.2% (2012)	28.3%	211.5%		Yes
 <sup>2</sup>	<b>CKD-4.2</b> Persons with type 1 or 2 diabetes and chronic kidney disease receiving medical evaluation (percent, 65+ years)	23.0% (2007)	27.7% (2012)	25.3%	204.3%		Yes
 <sup>11</sup>	<b>CKD-5</b> Persons with diabetes and chronic kidney disease receiving recommended treatment (percent, 65+ years)	73.6% (2007)	71.7% (2011)	81.0%		2.6%	Yes
 <sup>8</sup>	<b>CKD-6.1</b> Persons with chronic kidney disease and hypertension (age-adjusted, percent, 18+ years)	22.7% (2001–2006)	24.0% (2007–2012)	17.6%		5.7%	No
 <sup>6</sup>	<b>CKD-6.2</b> Persons with chronic kidney disease: statin use (age-adjusted, percent, 50+ years)	21.6% (2001–2006)	21.9% (2007–2012)	25.6%	7.5%		No
 <sup>14</sup>	<b>CKD-7</b> Deaths among persons with chronic kidney disease (age-adjusted, per 1,000 person years of follow-up, 18+ years)	22.2 (1999–2004)	20.1 (2005–2010)	.			
 <sup>4</sup>	<b>CKD-8</b> New cases of end-stage renal disease (adjusted for age, sex, and race; per million population)	386.3 (2007)	359.2 (2012)	347.7	70.2%		Yes
 <sup>4</sup>	<b>CKD-9.1</b> New cases of kidney failure due to diabetes (adjusted for age, sex, and race; per million population)	168.7 (2007)	154.0 (2012)	151.8	87.0%		Yes
 <sup>2</sup>	<b>CKD-9.2</b> New cases of kidney failure due to diabetes among persons with diabetes (adjusted for age, sex, and race; per million persons with diabetes)	2,618.0 (2007)	2,245.0 (2012)	2,356.2	142.5%		Yes

**Table 6–2. Midcourse Progress for Measurable<sup>1</sup> Chronic Kidney Disease Objectives—Continued**

## LEGEND

	Target met or exceeded <sup>2,3</sup>		Improving <sup>4,5</sup>		Little or no detectable change <sup>6-10</sup>		Getting worse <sup>11,12</sup>		Baseline only <sup>13</sup>		Informational <sup>14</sup>
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	Objective Description	Baseline Value (Year)	Midcourse Value (Year)	Target	Movement Toward Target <sup>15</sup>	Movement Away From Baseline <sup>16</sup>	Movement Statistically Significant <sup>17</sup>
	<sup>2</sup> <b>CKD-10</b> Chronic kidney disease patients under nephrologist's care 12+ months before renal replacement therapy (percent)	27.3% (2007)	33.1% (2012)	30.0%	214.8%		Yes
	<sup>4</sup> <b>CKD-11.1</b> Hemodialysis patients using arteriovenous fistulas as primary access mode (percent, 18+ years)	46.0% (2006)	49.6% (2007)	50.6%	78.3%		Yes
	<sup>4</sup> <b>CKD-11.2</b> Hemodialysis patients using catheters as only access mode (percent, 18+ years)	29.0% (2006)	27.7% (2007)	26.1%	44.8%		Yes
	<sup>2</sup> <b>CKD-11.3</b> New hemodialysis patients using arteriovenous fistulas as primary access mode (percent, 18+ years)	31.8% (2007)	36.8% (2012)	35.0%	156.2%		Yes
	<sup>4</sup> <b>CKD-12</b> Dialysis patients on waiting list for or receiving a kidney transplant within 1 year of end-stage renal disease start (percent, <70 years)	17.0% (2006)	17.7% (2011)	18.7%	41.2%		Yes
	<sup>11</sup> <b>CKD-13.1</b> Persons receiving a kidney transplant within 3 years of end-stage renal disease (percent, <70 years)	18.3% (2004)	14.7% (2009)	20.1%		19.7%	Yes
	<sup>14</sup> <b>CKD-13.2</b> Persons receiving a preemptive kidney transplant at the start of end-stage renal disease (ESRD) (percent, <70 years)	4.0% (2007)	3.7% (2012)				
	<sup>2</sup> <b>CKD-14.1</b> Total deaths among persons on dialysis (per 1,000 patient years at risk)	214.7 (2007)	181.4 (2012)	193.2	154.9%		Yes
	<sup>2</sup> <b>CKD-14.2</b> Deaths of persons on dialysis in first 3 months of renal replacement therapy (per 1,000 patient years at risk)	365.6 (2007)	311.8 (2012)	329.0	147.0%		Yes
	<sup>2</sup> <b>CKD-14.3</b> Cardiovascular disease deaths among persons on dialysis (per 1,000 patient years at risk)	92.4 (2007)	75.5 (2012)	83.2	183.7%		Yes
	<sup>4</sup> <b>CKD-14.4</b> Total deaths among persons with a functioning kidney transplant (per 1,000 patient years at risk)	30.1 (2007)	27.2 (2012)	27.1	96.7%		Yes
	<sup>4</sup> <b>CKD-14.5</b> Cardiovascular disease deaths among persons with a functioning kidney transplant (per 1,000 patient years at risk)	4.9 (2007)	3.3 (2012)	2.9	80.0%		Yes



**Table 6–3. Midcourse Health Disparities<sup>1</sup> for Population-based Chronic Kidney Disease Objectives**

Most favorable (least adverse) and least favorable (most adverse) group rates and summary disparity ratios<sup>2,3</sup> for selected characteristics at the midcourse data point

Population-based Objectives	Sex		Race and Ethnicity							Education <sup>4</sup>						Family Income <sup>5</sup>					Disability		Location										
	Male	Female	American Indian or Alaska Native	Asian	Native Hawaiian or other Pacific Islander	Two or more races	Hispanic or Latino	Black, not Hispanic	White, not Hispanic	Less than high school	High school graduate	At least some college	Associate's degree	4-year college	Advanced degree	Poor	Near-poor	Middle	Near-high	High	Persons with disabilities	Persons without disabilities	Metropolitan	Nonmetropolitan									
	Summary Disparity Ratio <sup>2</sup>	Summary Disparity Ratio <sup>2</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>3</sup>	Summary Disparity Ratio <sup>2</sup>	Summary Disparity Ratio <sup>2</sup>									
<b>CKD-1</b> Persons with chronic kidney disease (age-adjusted, percent, 18+ years) (2007–2012)			1.225*								1.195*			a		b		1.234*				c	d	1.151*		e	f		g	1.498*			
<b>CKD-2</b> Persons with chronic kidney disease who know they have impaired renal function (age-adjusted, percent, 45+ years) (2007–2012)			1.337*								1.305			a		b		1.388					c	d	1.388		e	f		g	1.605*		
<b>CKD-3</b> Hospital patients with acute kidney injury who have renal evaluation within 6 months post discharge (percent, 65+ years) (2012)			1.171*		h	h				i	i	1.324																					
<b>CKD-4.1</b> Persons with chronic kidney disease receiving medical evaluation (percent, 65+ years) (2012)			1.120*		h	h				i	i	1.506*																					
<b>CKD-4.2</b> Persons with type 1 or 2 diabetes and chronic kidney disease receiving medical evaluation (percent, 65+ years) (2012)			1.013		h	h				i	i	1.503*																					
<b>CKD-5</b> Persons with diabetes and chronic kidney disease receiving recommended treatment (percent, 65+ years) (2011)			1.047*		h	h				i	i	1.083*																					
<b>CKD-6.1</b> Persons with chronic kidney disease and hypertension (age-adjusted, percent, 18+ years) (2007–2012)			1.180								1.337			a		b		1.187					c	d	1.909*		e	f		g	1.155		
<b>CKD-6.2</b> Persons with chronic kidney disease: statin use (age-adjusted, percent, 50+ years) (2007–2012)			1.207								1.414			a		b		1.279					c	d	1.281		e	f		g	1.116		

**Table 6–3. Midcourse Health Disparities<sup>1</sup> for Population-based Chronic Kidney Disease Objectives—Continued**

Most favorable (least adverse) and least favorable (most adverse) group rates and summary disparity ratios<sup>2,3</sup> for selected characteristics at the midcourse data point

LEGEND

At the midcourse data point  Group with the most favorable (least adverse) rate  Group with the least favorable (most adverse) rate  Data are available, but this group did not have the highest or lowest rate.  Data are not available for this group because the data were statistically unreliable, not collected, or not analyzed.

Population-based Objectives	Characteristics and Groups																								
	Sex		Race and Ethnicity							Education <sup>4</sup>					Family Income <sup>5</sup>					Disability		Location			
	Male	Female	American Indian or Alaska Native	Asian	Native Hawaiian or other Pacific Islander	Two or more races	Hispanic or Latino	Black, not Hispanic	White, not Hispanic	Less than high school	High school graduate	At least some college	Associate's degree	4-year college	Advanced degree	Poor	Near-poor	Middle	Near-high	High	Persons with disabilities	Persons without disabilities	Metropolitan	Nonmetropolitan	
<b>CKD-7</b> Deaths among persons with chronic kidney disease (age-adjusted, per 1000 person years of follow-up, 18+ years) (2005–2010)																									
<b>CKD-8</b> New cases of end-stage renal disease (adjusted for age, sex, and race; per million population) (2012)																									
<b>CKD-9.1</b> New cases of kidney failure due to diabetes (adjusted for age, sex, and race; per million population) (2012)																									
<b>CKD-9.2</b> New cases of kidney failure due to diabetes among persons with diabetes (adjusted for age, sex, and race; per million persons with diabetes) (2012)																									
<b>CKD-10</b> Chronic kidney disease patients under nephrologist's care 12+ months before renal replacement therapy (percent) (2012)																									
<b>CKD-11.1</b> Hemodialysis patients using arteriovenous fistulas as primary access mode (percent, 18+ years) (2007)																									
<b>CKD-11.2</b> Hemodialysis patients using catheters as only access mode (percent, 18+ years) (2007)																									
<b>CKD-11.3</b> New hemodialysis patients using arteriovenous fistulas as primary access mode (percent, 18+ years) (2012)																									

**Table 6–3. Midcourse Health Disparities<sup>1</sup> for Population-based Chronic Kidney Disease Objectives—Continued**

Most favorable (least adverse) and least favorable (most adverse) group rates and summary disparity ratios<sup>2,3</sup> for selected characteristics at the midcourse data point

Population-based Objectives	LEGEND		Characteristics and Groups																										
	At the midcourse data point		Sex						Race and Ethnicity						Education <sup>4</sup>						Family Income <sup>5</sup>					Disability		Location	
	Group with the most favorable (least adverse) rate	Group with the least favorable (most adverse) rate	Summary Disparity Ratio <sup>2</sup>	American Indian or Alaska Native	Asian	Native Hawaiian or other Pacific Islander	Two or more races	Hispanic or Latino	Black, not Hispanic	White, not Hispanic	Summary Disparity Ratio <sup>3</sup>	Less than high school	High school graduate	At least some college	Associate's degree	4-year college	Advanced degree	Summary Disparity Ratio <sup>3</sup>	Poor	Near-poor	Middle	Near-high	High	Summary Disparity Ratio <sup>3</sup>	Persons with disabilities	Persons without disabilities	Summary Disparity Ratio <sup>3</sup>	Metropolitan	Nonmetropolitan
<b>CKD-12</b> Dialysis patients on waiting list for or receiving a kidney transplant within 1 year of end-stage renal disease start (percent, <70 years) (2011)	█	█	1.119*	█	█	█	█	█	█	2.089*	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
<b>CKD-13.1</b> Persons receiving a kidney transplant within 3 years of end-stage renal disease (percent, <70 years) (2009)	█	█	1.116*	█	█	█	█	█	█	1.774*	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
<b>CKD-13.2</b> Persons receiving a preemptive kidney transplant at the start of end-stage renal disease (ESRD) (percent, <70 years) (2012)	█	█	1.098*	█	█	█	█	█	█	2.779*	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
<b>CKD-14.1</b> Total deaths among persons on dialysis (per 1,000 patient years at risk) (2012)	█	█	1.000	█	█	█	█	█	█	1.240*	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
<b>CKD-14.2</b> Deaths of persons on dialysis in first 3 months of renal replacement therapy (per 1,000 patient years at risk) (2012)	█	█	1.030	█	█	█	█	█	█	2.005*	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
<b>CKD-14.3</b> Cardiovascular disease deaths among persons on dialysis (per 1,000 patient years at risk) (2012)	█	█	1.071*	█	█	█	█	█	█	1.271*	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
<b>CKD-14.4</b> Total deaths among persons with a functioning kidney transplant (per 1,000 patient years at risk) (2012)	█	█	1.164*	█	█	█	█	█	█	1.358*	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
<b>CKD-14.5</b> Cardiovascular disease deaths among persons with a functioning kidney transplant (per 1,000 patient years at risk) (2012)	█	█	1.003	█	█	█	█	█	█	1.465*	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

**Table 6–3. Midcourse Health Disparities<sup>1</sup> for Population-based Chronic Kidney Disease Objectives—Continued**

NOTES

See [HealthyPeople.gov](https://www.healthypeople.gov) for all Healthy People 2020 data. The **Technical Notes** provide more information on the measures of disparities.

FOOTNOTES

<sup>1</sup>**Health disparities** were assessed among population groups within specified demographic characteristics (sex, race and ethnicity, educational attainment, etc.). This assessment did not include objectives that were not population-based, such as those based on states, worksites, or those monitoring the number of events.

<sup>2</sup>When there were only two groups (e.g., male and female), the **summary disparity ratio** was the ratio of the higher to the lower rate.

<sup>3</sup>When there were three or more groups (e.g., white non-Hispanic, black non-Hispanic, Hispanic) and the most favorable rate ( $R_b$ ) was the highest rate, the **summary disparity ratio** was calculated as  $R_b/R_a$ , where  $R_a$  = the average of the rates for all other groups. When there were three or more groups and the most favorable rate was the lowest rate, the summary disparity ratio was calculated as  $R_a/R_b$ .

<sup>4</sup>Unless otherwise footnoted, data do not include persons under age 25 years.

<sup>5</sup>Unless otherwise footnoted, the poor, near-poor, middle, near-high, and high income groups are for persons whose family incomes were less than 100%, 100%–199%, 200%–399%, 400%–599%, and at or above 600% of the poverty threshold, respectively.

\*The summary disparity ratio was significantly greater than 1.000. Statistical significance was assessed at the 0.05 level using a normal one-sided test on the natural logarithm scale.

<sup>a</sup>Data are for persons who completed some college or received an associate's degree.

<sup>b</sup>Data are for persons who graduated from college or above.

<sup>c</sup>Data are for persons whose family income was 400% to 499% of the poverty threshold.

<sup>d</sup>Data are for persons whose family income was 500% or more of the poverty threshold.

<sup>e</sup>Data do not include persons under age 20 years.

<sup>f</sup>Data are for persons with activity limitations.

<sup>g</sup>Data are for persons without activity limitations.

<sup>h</sup>Data are for Asian or Pacific Islander persons.

<sup>i</sup>Data include persons of Hispanic origin.

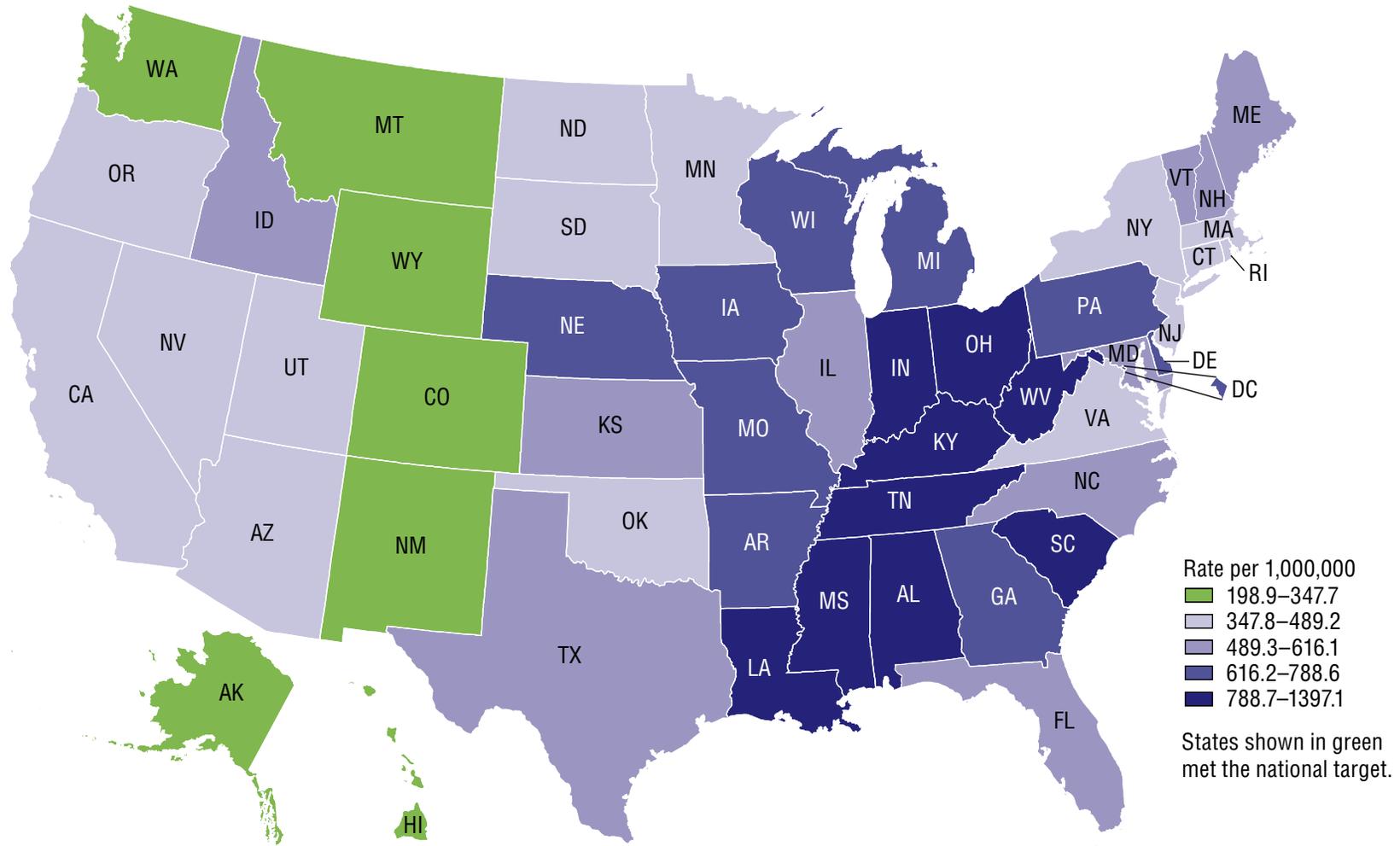
<sup>j</sup>The rate for this population group was suppressed due to small sample size.

DATA SOURCES

CKD-1	National Health and Nutrition Examination Survey (NHANES), CDC/NCHS
CKD-2	National Health and Nutrition Examination Survey (NHANES), CDC/NCHS
CKD-3	United States Renal Data System (USRDS), NIH/NIDDK
CKD-4.1	United States Renal Data System (USRDS), NIH/NIDDK
CKD-4.2	United States Renal Data System (USRDS), NIH/NIDDK
CKD-5	United States Renal Data System (USRDS), NIH/NIDDK
CKD-6.1	National Health and Nutrition Examination Survey (NHANES), CDC/NCHS
CKD-6.2	National Health and Nutrition Examination Survey (NHANES), CDC/NCHS
CKD-7	National Death Index (NDI), CDC/NCHS; National Health and Nutrition Examination Survey (NHANES), CDC/NCHS
CKD-8	United States Renal Data System (USRDS), NIH/NIDDK
CKD-9.1	United States Renal Data System (USRDS), NIH/NIDDK
CKD-9.2	United States Renal Data System (USRDS), NIH/NIDDK; National Health Interview Survey (NHIS), CDC/NCHS
CKD-10	United States Renal Data System (USRDS), NIH/NIDDK
CKD-11.1	Clinical Performance Measures Project (CPM), CMS; United States Renal Data System (USRDS), NIH/NIDDK
CKD-11.2	Clinical Performance Measures Project (CPM), CMS; United States Renal Data System (USRDS), NIH/NIDDK
CKD-11.3	Clinical Performance Measures Project (CPM), CMS; United States Renal Data System (USRDS), NIH/NIDDK
CKD-12	United States Renal Data System (USRDS), NIH/NIDDK
CKD-13.1	United States Renal Data System (USRDS), NIH/NIDDK
CKD-13.2	United States Renal Data System (USRDS), NIH/NIDDK
CKD-14.1	United States Renal Data System (USRDS), NIH/NIDDK
CKD-14.2	United States Renal Data System (USRDS), NIH/NIDDK
CKD-14.3	United States Renal Data System (USRDS), NIH/NIDDK
CKD-14.4	United States Renal Data System (USRDS), NIH/NIDDK
CKD-14.5	United States Renal Data System (USRDS), NIH/NIDDK

## Map 6–1. New Cases of End-stage Renal Disease, by State: 2012

Healthy People 2020 Objective CKD-8 • National Target = 347.7 per 1,000,000 population • National Rate = 359.2 per 1,000,000 population

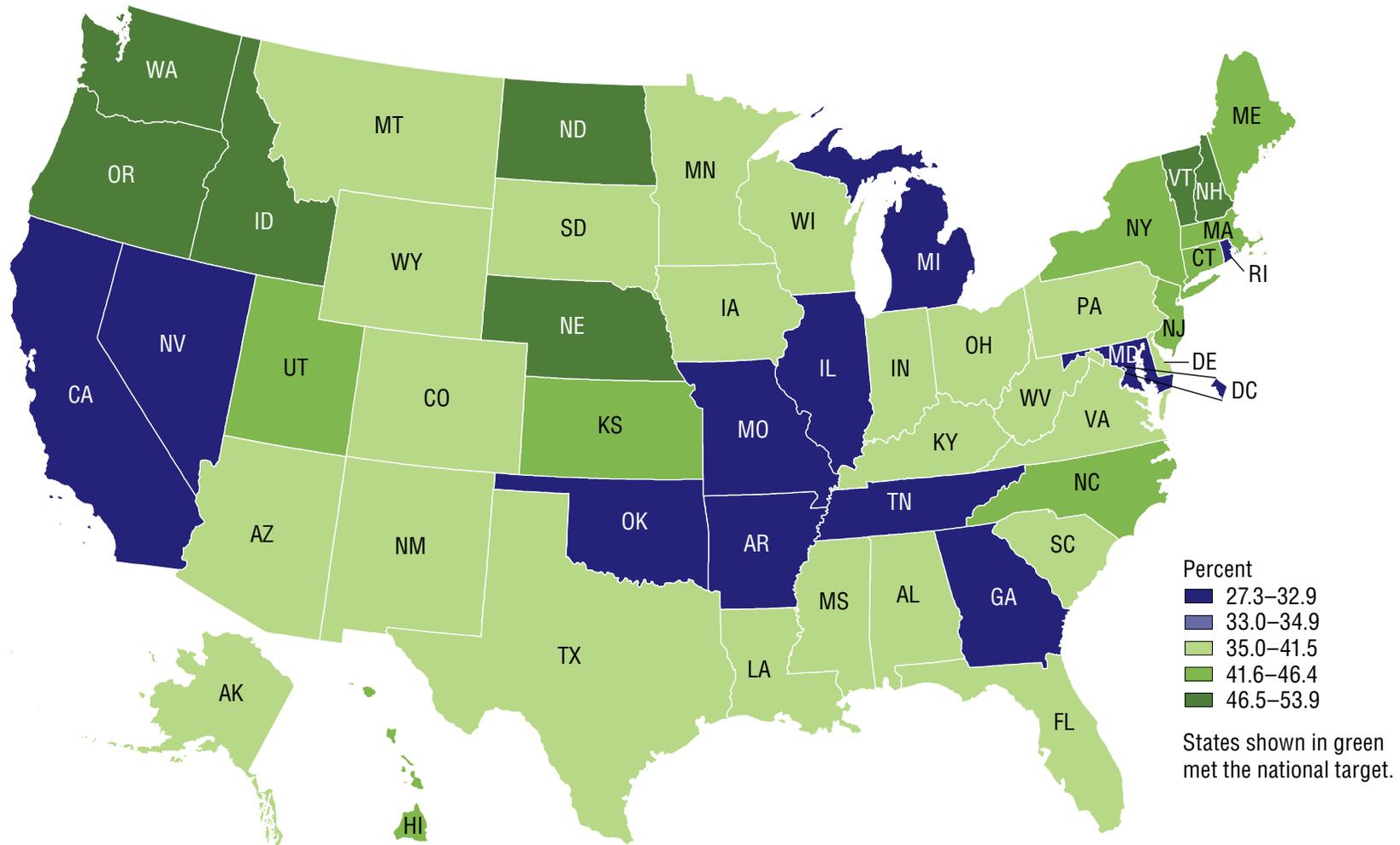


NOTES: Data are for new cases of end-stage renal disease reported per million population and are age-adjusted to the 2000 standard population. Data are displayed by a modified Jenks classification for U.S. states which creates categories that minimize within-group variation and maximize between-group variation. The [Technical Notes](#) provide more information on the data and methods.

DATA SOURCE: United States Renal Data System (USRDS), NIH/NIDDK

## Map 6–2. New Hemodialysis Patients (18+ years) Who Used Arteriovenous Fistulas as Primary Vascular Access Mode, by State: 2012

Healthy People 2020 Objective CKD-11.3 • National Target = 35.0% • National Rate = 36.8%

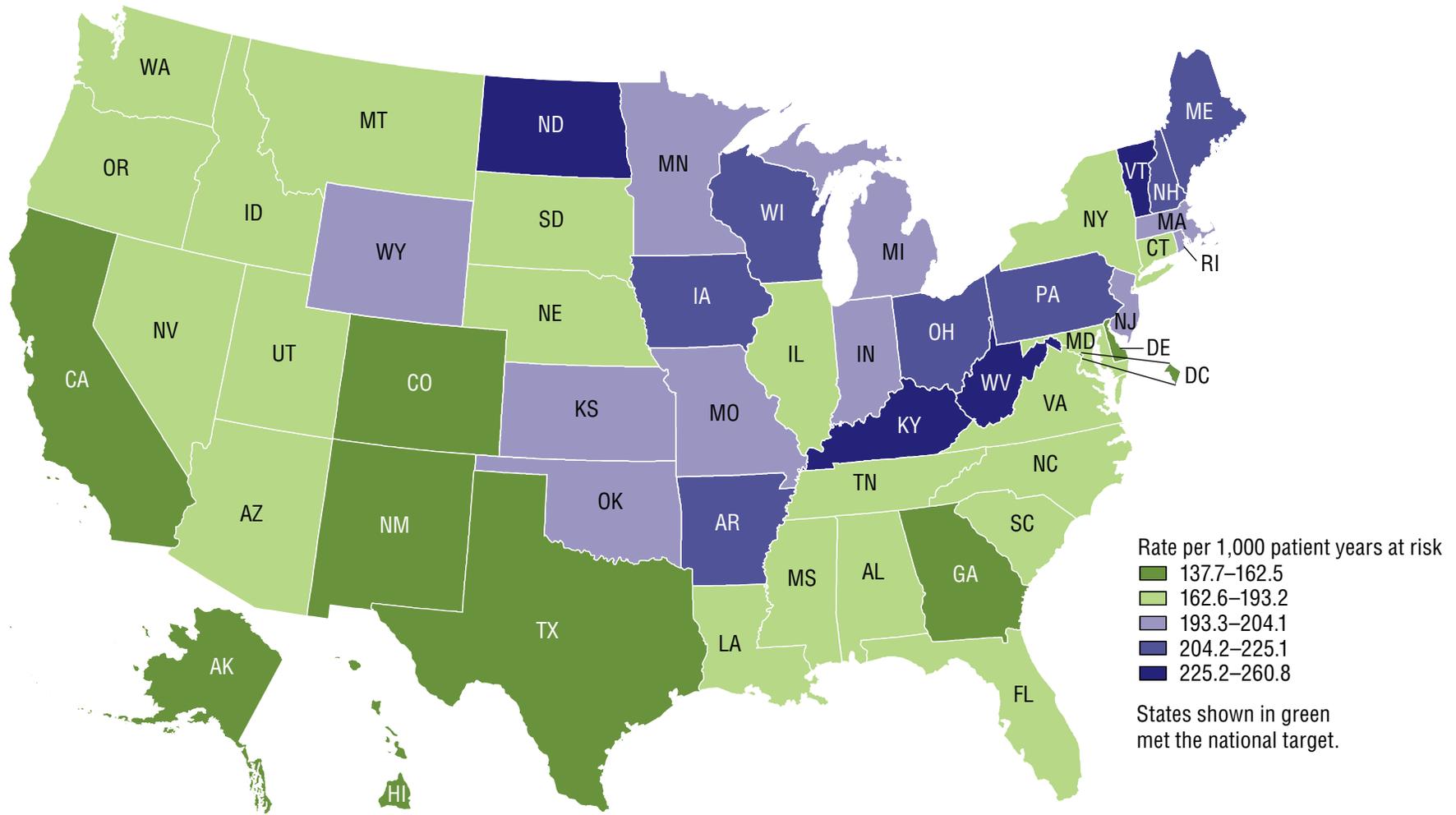


NOTES: Data are for new adult hemodialysis patients who used arteriovenous fistulas or a maturing fistula as the primary mode of vascular access at the start of renal replacement therapy. Data are displayed by a modified Jenks classification for U.S. states which creates categories that minimize within-group variation and maximize between-group variation. The [Technical Notes](#) provide more information on the data and methods.

DATA SOURCES: Clinical Performance Measures Project (CPM), CMS; United States Renal Data System (USRDS), NIH/NIDDK

### Map 6–3. Total Deaths Among Persons on Dialysis, by State: 2012

Healthy People 2020 Objective CKD-14.1 • National Target = 193.2 per 1,000 patient years at risk • National Rate = 181.4 per 1,000 patient years at risk



NOTES: Data are for deaths of persons on dialysis per 1,000 patient years at risk. Data are displayed by a modified Jenks classification for U.S. states which creates categories that minimize within-group variation and maximize between-group variation. The [Technical Notes](#) provide more information on the data and methods.

DATA SOURCE: United States Renal Data System (USRDS), NIH/NIDDK