

Chronic Kidney Disease in the United States, 2023

Accessible Version: <https://www.cdc.gov/kidneydisease/publications-resources/CKD-national-facts.html>

When people develop **chronic kidney disease (CKD)**, their kidneys become damaged and over time may not clean the blood as well as healthy kidneys. If kidneys do not work well, toxic waste and extra fluid accumulate in the body and may lead to high blood pressure, heart disease, stroke, and early death. However, people with CKD and people at risk for CKD can take steps to protect their kidneys with the help of their health care providers.

CKD Is Common Among US Adults

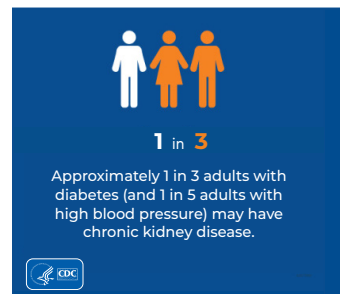
Fast Stats

- More than 1 in 7 US adults—about 35.5 million people, or 14%—are estimated to have CKD.[†]
- As many as 9 in 10 adults with CKD **do not know** they have it.
- About 1 in 3 adults with severe CKD **do not know** they have CKD.



CKD Risk Factors

Diabetes and high blood pressure are the more common causes of CKD in most adults. Other risk factors include heart disease, obesity, a family history of CKD, inherited kidney disorders, past damage to the kidneys, and older age.

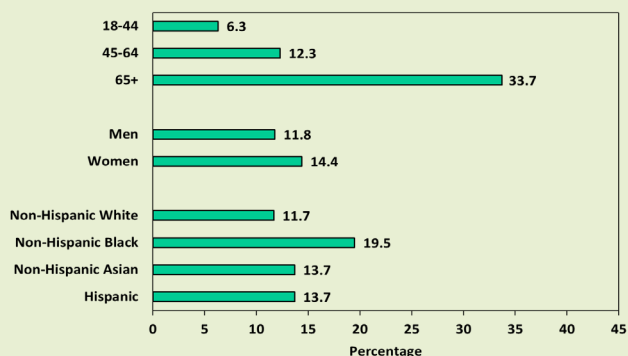


CKD by Age, Sex, and Race/Ethnicity

According to current estimates:[†]

- CKD is more common in people aged 65 years or older (34%) than in people aged 45–64 years (12%) or 18–44 years (6%).
- CKD is slightly more common in women (14%) than men (12%).
- CKD is more common in non-Hispanic Black adults (20%) than in non-Hispanic Asian adults (14%) or non-Hispanic White adults (12%).
- About 14% of Hispanic adults have CKD.

Percentage of US Adults Aged 18 Years and Older With CKD,[†] by Age, Sex, and Race/Ethnicity



[†]CKD stages 1–4 using data from the 2017–March 2020 National Health and Nutrition Examination Survey based on 2021 CKD Epidemiology Collaboration GFR estimating equation, including serum creatinine, age, and sex. For more details on methods, see “How Estimates Were Calculated.”

Managing blood sugar and blood pressure can help keep kidneys healthy.

Ways to Prevent CKD

- Manage risk factors for CKD:
 - High blood sugar levels.
 - High blood pressure.

Keeping a healthy body weight through a balanced diet and physical activity can help manage blood pressure and blood sugar levels in people with diabetes or in people at risk of developing type 2 diabetes.

Preventing type 2 diabetes can help prevent CKD and kidney failure. Talk to a kidney doctor about treatment options if CKD is severe and kidney function is very low.

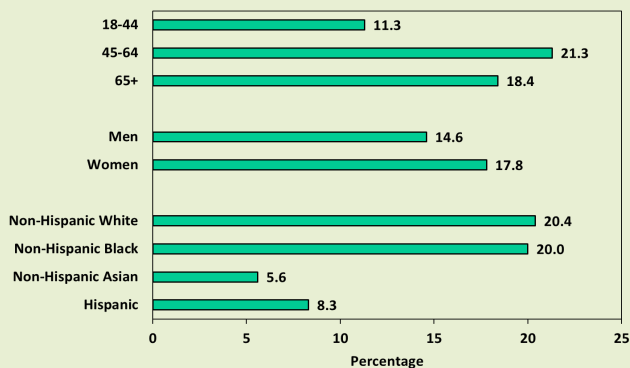


U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Treatment to Lower Blood Sugar[†]

- Newer blood sugar–lowering medicines, such as GLP1 receptor agonists, SGLT2 inhibitors, and DPP-4 inhibitors, have been approved by US Food & Drug Administration (FDA). These medicines were recently recommended for people with both diabetes and CKD to reduce risks for kidney disease progression or cardiovascular complications. Percentages of adults with both CKD and diagnosed diabetes who are prescribed these blood sugar–lowering medicines differ by age and race/ethnicity:
 - Adults with both CKD and diagnosed diabetes are more likely to be prescribed newer blood sugar–lowering medicines if they are aged 45–64 years (21%) and 65 years or older (18%) than if they are aged 18–44 years (11%).
 - Adult women with both CKD and diagnosed diabetes are about as likely to be prescribed newer blood sugar–lowering medicines (18%) as adult men (15%).
 - Non-Hispanic White adults (20%) and Non-Hispanic Black adults (20%) with both CKD and diagnosed diabetes are more likely to be prescribed newer blood sugar–lowering medicines than Hispanic adults (8%) or non-Hispanic Asian adults (6%)

Percentage of US Adults Aged 18 Years and Older With Both CKD and Diagnosed Diabetes Who Were Prescribed Newer Blood Sugar–Lowering Medications,[†] by Age, Sex, and Race/Ethnicity



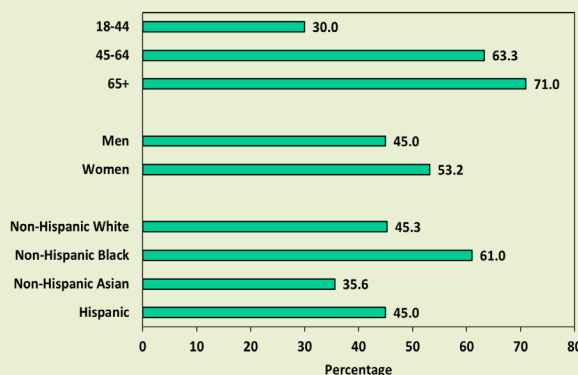
[†]GLP-1 receptor agonists, SGLT2 inhibitors, and DPP-4 inhibitors antihyperglycemic medicines using data from the 2017–March 2020 National Health and Nutrition Examination Survey based on 2021 CKD Epidemiology Collaboration GFR estimating equation, including serum creatinine, age, and sex. For more details on methods, see “How Estimates Were Calculated.”

Treatment to Lower Blood Pressure[†]

- Blood pressure–lowering medicines are recommended for people with both diabetes and CKD. Percentages of adults with both CKD and diagnosed diabetes who are prescribed blood pressure–lowering medicines differ by age, sex, and race/ethnicity:
 - Adults with both CKD and diagnosed diabetes are more likely to be prescribed blood pressure medicines if they are 45–64 years (63%) or 65 years or older (71%) than if they are 18–44 years (30%).
 - Adult women with both CKD and diagnosed diabetes are more likely to be prescribed blood pressure medicines (53%) than adult men (45%).

- Non-Hispanic Black adults with both CKD and diagnosed diabetes are more likely to be prescribed blood pressure medicines (61%) than non-Hispanic White adults (45%) or non-Hispanic Asian adults (36%).
- About 45% of Hispanic adults with both CKD and diagnosed diabetes are prescribed blood pressure medicines.

Percentage of US Adults Aged 18 Years and Older With Both CKD and Diagnosed Diabetes Who Were Prescribed Blood Pressure–Lowering Medications,[†] by Age, Sex, and Race/Ethnicity



[†]Angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers using data from the 2017–March 2020 National Health and Nutrition Examination Survey based on 2021 CKD Epidemiology Collaboration GFR estimating equation, including serum creatinine, age, and sex. For more details on methods, see “How Estimates Were Calculated.”

Testing and Treatment: Find it Early, Treat it Early

- Test for CKD regularly in people who have diabetes, high blood pressure, or other risk factors for CKD. People with CKD may not feel ill or notice any symptoms until CKD is advanced.
- The only way to find out if people have CKD is through simple blood and urine tests. The blood test checks for the level of creatinine, a waste product produced by muscles, to see how well the kidneys work. The urine test checks for protein, which may indicate kidney damage.
- Following a healthy diet and taking medicine for diabetes, medicine for high blood pressure, and other medicines to protect the kidneys may keep CKD from getting worse and may prevent other health problems such as heart disease.

CKD-Related Health Problems

As CKD worsens over time, related health problems become more likely. However, CKD-related health problems can improve with treatment.

Heart Disease and Stroke

- Having CKD increases the chances of having heart disease and stroke.
- Managing high blood pressure, blood sugar, and cholesterol levels—all factors that increase the risk for heart disease and stroke—is very important for people with CKD.

Early Death

Adults with CKD are at a higher risk of dying earlier than adults of similar age without CKD.

Health Problems Due to Low Kidney Function

- Anemia or low red blood cell count, which can cause fatigue and weakness.
- Extra fluid in the body, which can cause high blood pressure, swelling in the legs, or shortness of breath.
- A weakened immune system, which makes it easier to develop infections.
- Loss of appetite or nausea.
- Decreased sexual response.
- Confusion, problems with memory and thinking, or depression.
- Low calcium levels and high phosphorus levels in the blood, which can cause bone disease and heart disease.
- High potassium levels in the blood, which can cause an irregular or abnormal heartbeat and lead to death.

Kidney Failure

Kidney failure happens when kidney damage is severe and kidney function is very low. Dialysis or a kidney transplant is then needed for survival. Kidney failure treated with dialysis or a kidney transplant is called **end-stage kidney disease (ESKD)**. CKD is more likely to lead to kidney failure, especially in older adults, if the kidneys are damaged due to unmanaged risk factors, repeated kidney infections, or drugs or toxins that are harmful to the kidneys. Social factors, such as lower income and related factors of food insecurity and poorer access to quality health care, are also associated with worsening CKD. However, not everyone with CKD develops kidney failure. If CKD is detected early, treatment may slow the decline in kidney function and delay kidney failure. In some cases, though, kidney failure develops even with treatment.

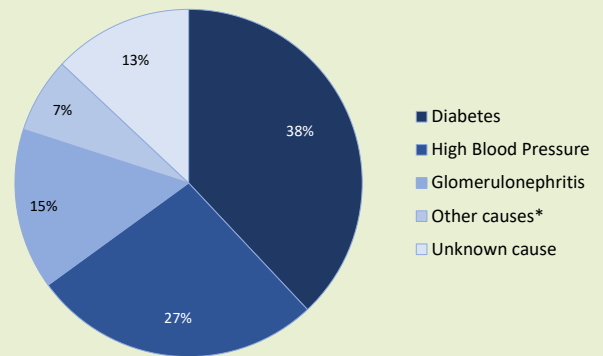
Facts About ESKD

In 2020:

- About 130,522 people in the United States started treatment for ESKD.
- Nearly 808,000 people in the United States, or 2 in every 1,000 people, were living with ESKD: 69% were on dialysis and 31% were living with a kidney transplant.
- Incidence rate of ESKD among men is 60% higher than among women.
- Non-Hispanic Black persons have 4 times the incidence rate of ESKD than non-Hispanic White persons.
- Hispanic persons have twice the incidence rate of ESKD than non-Hispanic White persons.
- Among adults aged 18 years and older in the United States, diabetes and high blood pressure remain the main causes of ESKD.
- Among children and adolescents younger than 18 years in the United States, polycystic kidney disease and glomerulonephritis (inflammation of the kidneys) are the main causes of ESKD.

People with diabetes, high blood pressure, or CKD need to talk to their doctor about how to protect their kidneys.

Reported Causes of End-Stage Kidney Disease in the United States



N=807,920 (all ages, 2020). Source: US Renal Data System.

*Includes polycystic kidney disease, among other causes.

People With CKD Can Lower Their Risk for Kidney Failure

- Learn about CKD from a primary care doctor or a kidney doctor (nephrologist) to better understand treatment options and protect the kidneys. People with glomerulonephritis, polycystic kidney disease, or other kidney disease should talk about specific treatment options with a kidney doctor.
- Monitor and manage blood sugar and blood pressure.
 - Have blood sugar and blood pressure checked regularly.
 - Use medicines if prescribed to lower blood sugar and blood pressure.
- Manage CKD:
 - Make lifestyle changes (e.g., healthy eating, physical activity) to prevent more kidney damage. Meet with a dietitian to create a kidney-healthy eating plan that is low in salt and fat and has the right amount and sources of protein. As CKD gets worse, the plan may also include limiting phosphorus and potassium.
 - Use medicines as directed to slow the decline in kidney function.
 - Stop smoking or do not start smoking.
 - Avoid exposures that can harm the kidneys or cause kidney function to suddenly get worse:
 - ◆ Certain medicines:
 - Over-the-counter pain medicines like ibuprofen and naproxen, which are also called non-steroidal anti-inflammatory drugs.
 - Some antibiotics.
 - ◆ Certain herbal supplements.
 - ◆ Excessive alcohol intake.
 - Review with health care providers all prescription and over-the-counter medications to make sure they are safe for the kidneys. Always talk to a doctor before taking any supplements.
 - Check with a doctor about other behaviors or substances that can harm the kidneys or about special precautions to take when doing medical tests or procedures, such as imaging studies or colonoscopies.

Acknowledgments

The following organizations** collaborated in developing and reviewing this fact sheet. Check their websites for CKD online resources for patients or providers:

Centers for Disease Control and Prevention

www.cdc.gov/kidneydisease

Centers for Medicare & Medicaid Services

www.cms.gov

US Department of Defense

www.health.mil

US Department of Veterans Affairs

www.va.gov/health

US Food & Drug Administration

www.fda.gov

Kidney Interagency Coordinating Committee

www.niddk.nih.gov/about-niddk/advisory-coordinating-committees/kuh-icc/kicc

National Heart, Lung, and Blood Institute of the National Institutes of Health

www.nhlbi.nih.gov

National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health

www.niddk.nih.gov

United States Renal Data System

www.usrds.org

American Association of Kidney Patients

www.aakp.org

American Society of Nephrology

www.asn-online.org

National Kidney Foundation

www.kidney.org

University of California, San Francisco, and University of California, San Francisco Center for Vulnerable Populations

www.ucsf.edu

University of Michigan, Division of Nephrology, Department of Internal Medicine, and University of Michigan Kidney Epidemiology and Cost Center

www.med.umich.edu/intmed/nephrology

**Links to nonfederal organizations are provided solely as a courtesy. Links do not constitute an endorsement of any organization by CDC, the Department of Army/Navy/Air Force, Department of Defense, or the federal government and none should be inferred. CDC is not responsible for the content of individual organization's web pages.

Note: This publication is not subject to copyright restrictions; duplicate and distribute copies as desired.

Citation: Centers for Disease Control and Prevention. Chronic Kidney Disease in the United States, 2023. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention; 2023.

References

1. National Institutes of Health. Health Information: Chronic Kidney Disease website. <https://www.niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd>. Accessed 3/24/2023.
2. Kidney Disease: Improving Global Outcomes CKD Work Group. KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease. *Kidney Inter.* 2013;3(1)(suppl):1–150.
3. United States Renal Data System 2022 Annual Data Report. <https://usrds-adr.niddk.nih.gov/2022>. Accessed 3/24/2023.
4. Diabetes in CKD. <https://digo.org/guidelines/diabetes-ckd>. Accessed 3/24/2023.

For Public Inquiries and Publications

CDC-INFO Contact Center

Telephone: 1-800-CDC-INFO (232-4636), 1-888-232-6348 TTY

Email: cdcinfo@cdc.gov

In English and Spanish

24 hours a day, 7 days a week

***How estimates were calculated:** Percentage of CKD stages 1–4 among US adults aged 18 years and older using data from the 2017–March 2020 National Health and Nutrition Examination Survey based on 2021 CKD Epidemiology Collaboration GFR estimating equation, including serum creatinine, age, and sex. CKD stage 5 (that is, kidney failure) was not included. Severe CKD refers to stage 4. These estimates were based on a single measure of albuminuria or serum creatinine; they do not account for persistence of albuminuria or elevated creatinine as indicated by the Kidney Disease Improving Global Outcomes recommendations. Thus, CKD in this report might be overestimated. Estimates by sex and race/ethnicity were age-standardized using the 2010 US Census population; the overall percentage is unadjusted. The number of adults with CKD stages 1–4 was estimated by applying the overall percentage to the 2019 US Census population aged 18 years and older. Blood pressure–lowering medicines included angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers; blood sugar–lowering medicines included GLP-1 receptor agonists, SGLT2 inhibitors, and DPP-4 inhibitors; diagnosed diabetes was self-reported.