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Curbing Chronic Kidney Disease

Keep Your Body's Filters Healthy

Your kidneys function as your body's filters. These two organs clear out toxins and compounds that would otherwise build up in your blood. This keeps the rest of your body running smoothly.

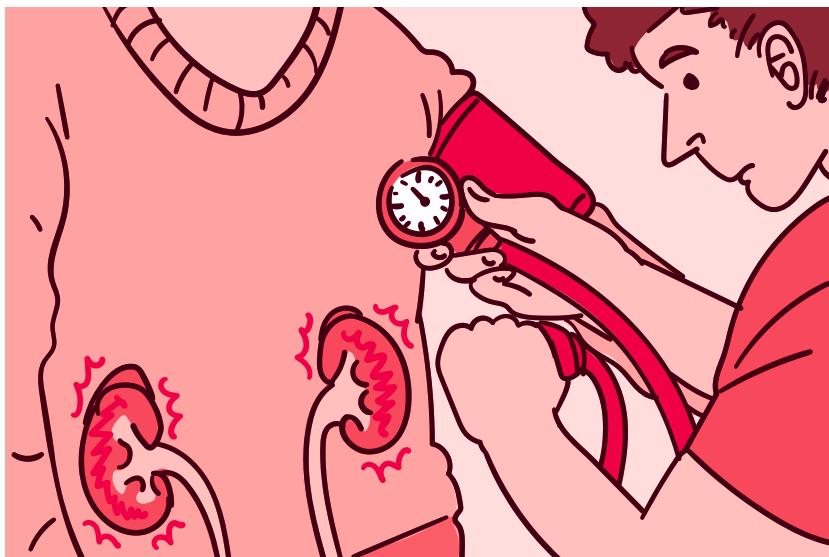
Your kidneys filter around 150 quarts of blood each day. This blood is circulated around your entire body. "So when the kidneys aren't working well, every cell and every organ in the body can be affected," says Dr. Jonathan Himmelfarb, a kidney specialist at Mount Sinai.

One of the most common kidney problems for adults is called chronic kidney disease, or CKD. In CKD, your kidneys aren't able to filter your blood properly.

More than 1 in every 7 adults in the U.S. has some level of CKD. But many people don't know they have it.

"People with chronic kidney disease generally have no symptoms until they're very near kidney failure," explains Dr. Michael Shlipak, a kidney-health researcher at the University of California, San Francisco.

CKD can't be cured. But catching



and treating it early can slow it down or even stop it from getting worse. So it's vital to know if you have CKD or are at risk for the condition.

Detecting Kidney Dysfunction •

The most common causes of CKD are diabetes, high blood pressure, and **cardiovascular** disease. These health conditions can damage the kidneys over time. Treating them as early as possible can reduce your risk of related kidney problems.

Genetics and a family history of kidney diseases can also raise your risk for kidney diseases. So can conditions that impact your overall health. These include infections, obesity, and cancer.

Certain medications may lead to kidney damage. For example, taking too many nonsteroidal anti-inflammatory drugs (NSAIDs) for too long can damage your kidneys.

As CKD worsens, you may start to have signs. These can include swelling in the legs, feet, ankles, hands,

or face. Symptoms of advanced CKD can include fatigue, loss of appetite, nausea or vomiting. You may also have trouble concentrating, weight loss, shortness of breath, muscle cramps, or chest pain.

Kidney problems can eventually lead to heart damage, too. "Advanced kidney disease just wears down the body, particularly the heart and brain," Shlipak says.

If you have a health condition that puts you at risk for CKD, talk with your doctor about getting tested before you have symptoms. You can also ask your doctor if any medications you take could damage the kidneys.

Blood and urine tests are the first steps in diagnosing CKD. A blood test that measures a substance called creatinine is commonly used to assess kidney function. But such test results can vary greatly depending on people's age, sex, physical activity levels, and other health conditions, Shlipak says. They're only an estimate of kidney function.

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Definitions

Cardiovascular

Related to the heart and the vessels that circulate blood through the body.

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Shlipak and others have been testing the use of another blood test, for a substance called cystatin C, to measure kidney function. Unlike creatinine, cystatin C levels are less affected by personal differences, he explains. Researchers have found that adding the two blood tests together can more accurately diagnose CKD. This can help doctors detect the disease earlier. It also lowers the chances that a person is mistakenly told they do or don't have the disease.

Getting a diagnosis of chronic kidney disease can be scary. But there are many treatment options and changes to your lifestyle that can help.

Dietary Changes • One important thing that people with CKD can do to stay healthy longer is make certain changes to their diet.

"Dietary changes are a fundamental aspect of managing chronic kidney disease," says Dr. Meryl Waldman, who studies nutrition and kidney health at NIH.

Avoiding foods and drinks high in certain nutrients may prevent or delay some health problems for people with CKD. These include

foods high in sodium, potassium, and phosphorus. Some people with advanced CKD may also benefit from avoiding too much protein.

Other aspects of a heart-healthy diet, like avoiding heavily processed packaged foods, are generally recommended. But there's no single meal plan that's best for everyone with CKD. Dietary advice depends on the disease stage, lab test results, and other health conditions you may have, Waldman says.

You can ask your doctor for a referral to a registered dietitian. One type of nutrition counseling for CKD is called medical nutrition therapy, or MNT. MNT can help you personalize your diet for your needs.

"Patients with CKD can feel like they're at the mercy of their illness. But dietary management can flip that script and help you become an active participant in your own health," Waldman says.

Getting Treatment • Other lifestyle changes, like getting more exercise and sleep, reducing stress, and avoiding alcohol and tobacco also help your body and organs work better together, Waldman adds.

Medications are a vital part of managing CKD, too. Some drugs to help manage CKD treat the underlying conditions, such as high blood pressure and diabetes.

"But in the last 10 years, there have been remarkable advances in terms of medications that directly treat kidney disease," Shlipak says. "When someone's diagnosed with early-stage or medium-stage kidney disease, we now have a variety of options that can slow the progression."

But it can take time to know if a drug is really working, Himmelfarb explains. During that time, kidney damage can get worse.

Himmelfarb and other scientists are now working on ways to predict the best drugs to give to people with

CKD. "We want to get the right treatment to the right patient at the right time, and ideally at the right dose," Himmelfarb says.

For some people with CKD, their kidneys may eventually stop working. This is called kidney failure. If this happens, you may need dialysis. Dialysis is a treatment that uses a machine to clean the blood. This can help you feel better and live longer. Some people with kidney failure may also be eligible for a kidney transplant.

Many of the same lifestyle changes recommended to people with CKD can also prevent it from developing in the first place. If you have or are at risk for CKD, talk with your doctor. See the Ask Your Doctor box for questions that can help guide the conversation. ■



Ask Your Doctor

You can take an active role in preventing and managing chronic kidney disease. Questions to ask your doctor can include:

- How often should I have tests to track my kidney function?
- Are my blood pressure and blood sugar levels where they need to be?
- Do any of my medicines or doses need to be changed?
- What can I do to keep kidney disease from getting worse?
- Do I need to change what I eat? Can you refer me to a dietitian for diet counseling?
- Should I see a kidney specialist (a nephrologist)?
- What other health problems may I face if I have kidney disease?

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For more about chronic kidney disease and online-only Q&As, see "Find More Information" in the online article: newsinhealth.nih.gov/2026/01/curbing-chronic-kidney-disease

Navigating Norovirus

Insights Into Stomach Bug Outbreaks

Outbreaks of a contagious “stomach bug” called norovirus can spread quickly. It often crops up in cruise ships, nursing homes, and other crowded places. People of any age can become infected with a norovirus. But the very old and young children are more likely to become very sick.

Noroviruses can affect your stomach and intestines. Symptoms include diarrhea, vomiting, nausea, and stomach pain. You may also have a fever, headache, and body aches. Once you’re infected with a norovirus, symptoms usually develop 12 to 48 hours later.

Noroviruses are the main cause of vomiting, diarrhea, and foodborne illnesses in the United States. Nearly half a million people with

a norovirus visit the emergency department each year.

You can get infected with a norovirus from direct contact with an infected person or from contaminated food, water, or surfaces. You can also be exposed to the virus from an infected person’s stool or vomit.

Your doctor can usually make a norovirus diagnosis based on your symptoms. But testing for norovirus can be done at a health care facility using lab tests.

No treatment has been approved for noroviruses. So, doctors usually treat the symptoms and try to limit the spread. They can prescribe medicines to stop vomiting and relieve nausea. They may also give you fluids for dehydration. Prescription and over-the-counter medicines are available to treat diarrhea.

Healthy adults usually recover from the illness in a few days. But if you have a weakened **immune system**, the illness can last longer and become life-threatening.

No vaccines have been approved to protect people from getting a norovirus. But some are being developed and tested in people.

NIH-funded researchers are now studying the virus using tiny 3D models of human intestines. These are called “mini-guts.” Scientists can expose these intestinal cells to noroviruses in the lab. After infecting a mini-gut, the virus begins to make copies of itself.

“This process allows us to study the cells’ responses to infection and test potential antivirals that can block the infection,” says Dr. Robert Atmar, an infectious disease expert at Baylor College of Medicine.

Researchers are also looking for the specific proteins that the viruses



use to enter cells. These are called cell receptors. Atmar and Dr. Mary Estes, who studies stomach viruses at Baylor College of Medicine, are trying to identify the cell receptor for a new strain of norovirus. It’s currently spreading around the world.

“Identifying the receptor should help us learn more about the disease and strategies to prevent it,” Estes explains.

In the meantime, if you have norovirus symptoms, doctors recommend staying home for 48 hours. It’s best to avoid contact with others if you can. See the Wise Choices box for more tips. ■



Wise Choices

Managing Norovirus Infection

If you or someone you live with has norovirus symptoms:

- **Avoid food preparation.** Wait until symptoms are gone before preparing food for others.
- **Use separate bathrooms** for healthy and unhealthy people, if possible.
- **Stay hydrated.** Drink lots of fluids. Avoid caffeine and alcohol.
- **Wash your hands often** with warm water and soap for at least 20 seconds. Find more tips at cdc.gov/clean-hands.
- **Safely clean up vomit/diarrhea:**
 - Use rubber or disposable gloves.
 - Clean and disinfect contaminated surfaces.
 - Don’t shake out contaminated laundry. Immediately wash in hot water and dry on high heat.



Definitions

Immune System

The body’s defense against germs and foreign substances.



Web Links

For more about norovirus, see “Find More Information” in the online article: newsinhealth.nih.gov/2026/01/navigating-norovirus



Health Capsules

For links to more information, please visit our website and see these stories online.

Acupuncture Relieves Chronic Low Back Pain in Older Adults

More than 1 out of 3 older adults in the U.S. have chronic low back pain. Pain is considered chronic when it lasts more than three months. Some find relief with pain medications or physical therapy. But others need more options. A new study looked at how much acupuncture might help older adults with chronic back pain.

Acupuncture uses thin metal needles to stimulate specific points on the body. Studies have shown it can help with different types of pain.

Researchers enrolled 800 adults ages 65 or older with chronic low

back pain. Participants were divided into three groups. Each received treatment for 12 weeks. One group had access to standard medical care alone. This included options for medicine and physical therapy. Another group had access to standard care plus eight to 15 sessions of acupuncture. The last group received standard care options plus enhanced acupuncture—with an additional four to six sessions of acupuncture.

The two groups who received acupuncture had less back pain than those offered standard care

alone. The acupuncture groups also reported improved physical function after six months. After 12 months, they had less disability from pain and fewer anxiety symptoms.

Nondrug pain relief options could be especially helpful for older adults who already take several medications. “Acupuncture offers a less invasive option that has a better safety profile than a lot of the common treatments for back pain in older adults,” says Dr. Lynn DeBar of Kaiser Permanente. ■

Neighborhood Design Impacts Walking Levels

Many Americans don't get enough exercise. A lack of physical activity can increase the risk of chronic conditions like heart disease, diabetes, and cancer. A new study suggests that your neighborhood's design can affect how many steps you get in a day.

Walking provides many health benefits. But some neighborhoods aren't as easy to get around on foot. They may lack sidewalks, parks, or nearby shops to entice you to go for a walk.

Researchers looked at how many

daily steps people got before and after moving to more walkable neighborhoods. They analyzed data from study participants' fitness smartphone apps. The neighborhoods were given a walkability score based on measures of pedestrian friendliness. For example, less distances to stores and parks led to higher scores.

Researchers found that people walked more when living in places with higher walkability. This trend

showed up across age, gender, weight, and fitness levels. The only exception was women over age 50. Their steps didn't change after relocating. People who moved to more walkable neighborhoods also walked faster.

“Our study shows that how much you walk is not just a question of motivation,” says Dr. Tim Althoff at the University of Washington. “There are many things that affect daily steps, and the built environment is clearly one of them.” ■



Featured Website

NIH Research in Context
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and where they may be heading. *NIH Research in Context* comes out quarterly. Read the latest story on early-life nutrition.

RESEARCH IN CONTEXT November 25, 2025

Early-life nutrition

Exposures in the womb can affect lifelong health. Nutrition matters, and what young, developing children eat—or are exposed to before birth—can have lasting impacts. This Research in Context feature looks at how scientists have used natural experiments to better understand how early-life nutrition affects lifelong health.

Your family may have pictures of you blowing out a candle on a cake at your first birthday party. Or sitting in a highchair at your first Thanksgiving. Maybe even a shot of you still in the womb, hidden under a maternity shirt, while your mom has an afternoon snack.

These meals happened long before you could remember them, but new research suggests that the nutrition you received from conception through early childhood likely helped lay the foundation for some aspects of health for the rest of your life.

How do we know this? It's hard to do long-term nutritional experiments using people. And it wouldn't be ethical to split young kids into two groups and feed one junk food for years. Or, even worse, purposefully expose them to hunger.



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