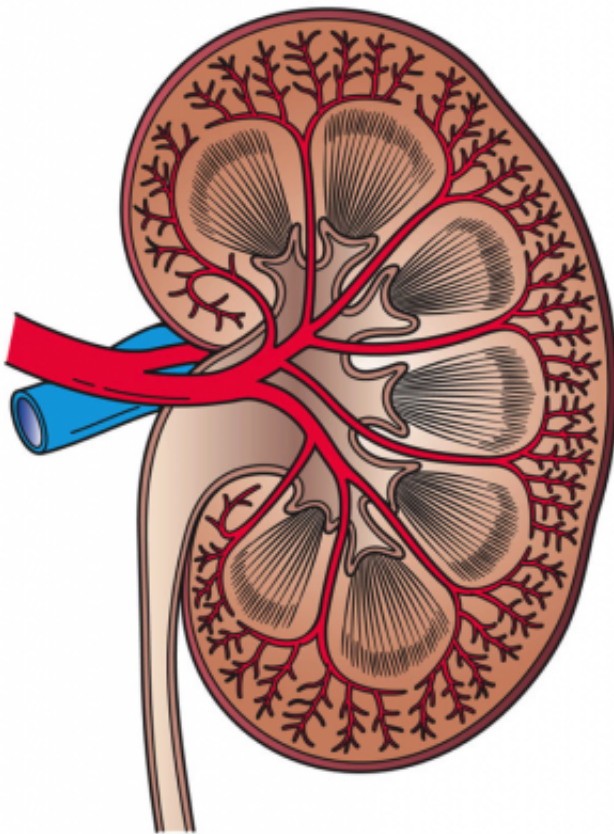


# New tool estimates looming risk of kidney failure in people with kidney disease

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This image shows a cross section of a kidney. Credit: Holly Fischer/Wikipedia

An online tool combining results of common medical tests can accurately estimate the risk of whether someone with chronic kidney disease will develop kidney failure in the next two to five years, an international team of researchers led by the Johns Hopkins Bloomberg

School of Public Health has found.

Reporting in the Jan. 12, 2016 *Journal of the American Medical Association (JAMA)*, the researchers say the new calculator will not only help patients at high risk for [kidney failure](#) prepare for dialysis or transplant, but could provide peace of mind to millions more who have chronic kidney disease but are not at serious risk of kidney failure.

Researchers estimate that 10 percent of the U.S. population—more than 20 million people—has kidney disease and more than 660,000 people have kidney failure requiring either dialysis to mechanically clean the blood or a [kidney transplant](#). In 2013, 117,000 patients developed kidney failure, meaning that approximately one percent of those with [chronic kidney disease](#) develop kidney failure every two years.

"This [tool](#) allows doctors to sit down with their patients and explain how likely it is that their kidneys will fail in the near future," says Josef Coresh, MD, PhD, the George W. Comstock Professor of Epidemiology at the Bloomberg School, and head of the Chronic Kidney Disease Prognosis Consortium, which conducted the study. "While the tool can aid in management of a patient's disease and prepare them for the worst, many more patients will find the results reassuring. You can reassure a lot of worried people with the fact that their risk is actually very low. The vast majority of patients will not need dialysis."

Building on a tool created by Canadian researchers studying Canadian patients, the Consortium validated the tool using data from more than 721,000 people in 30 countries. They found that a four-variable [risk calculator](#) accurately predicted the risk of kidney failure in two or five years, and an eight-variable calculator did moderately better. The four-variable risk calculator uses age, sex, an estimate of [kidney function](#) based on a blood test and the amount of protein in the urine, while the eight-variable risk calculator adds blood calcium, phosphate, bicarbonate

and albumin levels. The second set of laboratory tests isn't as widely done in clinical practice as the first.

The researchers found that the results in the United States were similar to those in the original Canadian study. They also found that, in countries outside North America, the risk tool needed slight adjustment to account for the lower kidney failure risk in these countries. The researchers hypothesize that the lower risk in countries outside North America could be because physicians in some countries may be less likely to refer patients for life-extending dialysis or because they may be better at treating kidney disease.

The Canadian tool had been criticized because the model included little data from African-Americans with kidney disease. African-Americans have the highest rates of kidney disease in the U.S. Including this population did not change the validity of the tool since it included variables that capture the excess risk, the researchers found.

"We've known which were the important tests to consider in determining the risk of kidney failure, but we didn't know exactly how to put them together and we didn't have a high level of confidence that this tool could be used widely," Coresh says. "Now we do."

The tool, which will be live <http://www.kidneyfailurerisk.com> on Jan. 12, 2016 can be helpful in managing the [kidney disease](#) of those at risk, acting in some cases as a wake-up call to promote better compliance with medication, diet and other lifestyle changes. It also gives patients and physicians time to plan for potential dialysis and/or transplant. People who go on dialysis do better when they can get surgery ahead of time to create a fistula, a connection between an artery and a vein to facilitate the mechanical cleansing process. A fistula takes months to heal before it can be used. If a kidney transplant is looking like a better option, patients can start looking for a potential kidney donor—the wait

for a kidney match can take up to 5 years, though [patients](#) can move up the list if a friend or loved one donates to them—and make other preparations.

"Dialysis and transplantation are expensive and complicated and take planning," says study co-author Morgan E. Grams, MD, PhD, a nephrologist and assistant professor of epidemiology at the Bloomberg School. "Knowing ahead of time allows people to consider their options."

**More information:** "Multinational assessment of accuracy of equations for predicting risk of kidney failure: a meta-analysis" [DOI: 10.1001/jama.2015.18202](#)

Provided by Johns Hopkins University Bloomberg School of Public Health

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