

detection, risk stratification, and treatment in primary care. The research initiative includes:

- » A “triple marker” approach that uses creatinine, cystatin C, and urine albumin for kidney testing
- » A clinical dashboard and clinical decision-making tools that integrate treatment for kidney disease, diabetes, hypertension, and cardiovascular disease
- » Telemedicine support to coordinate the efforts of specialists and primary care providers who are caring for patients with kidney disease



LEARN MORE

To learn more, visit the web resources listed below.

[Kidney Disease \(va.gov\)](https://www.research.va.gov/topics/kidney_disease.cfm) https://www.research.va.gov/topics/kidney_disease.cfm (Information about VA research on kidney disease)

[Researchers striving to improve detection of kidney disease in VA](https://www.research.va.gov/currents/0920-Researchers-striving-to-improve-detection-of-kidney-disease-in-VA.cfm) [https://www.research.va.gov/currents/0920-Researchers-striving-to-improve-detection-of-kidney-](https://www.research.va.gov/currents/0920-Researchers-striving-to-improve-detection-of-kidney-disease-in-VA.cfm)

[disease-in-VA.cfm](https://www.kidney.org/kidney-basics) (Feature article on VA researchers’ work to improve detection of kidney disease)

[Kidney Basics | National Kidney Foundation](https://www.kidney.org/kidney-basics) <https://www.kidney.org/kidney-basics> (Information on chronic kidney disease)

[Cystatin C | National Kidney Foundation](https://www.kidney.org/atoz/content/cystatinC) <https://www.kidney.org/atoz/content/cystatinC> (Information on cystatin C)

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Improving early detection of Kidney Disease

VA researchers are working to enhance early-detection tools and methods. The goal is to improve outcomes for Veterans and others nationwide.



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THE BURDEN OF CHRONIC KIDNEY DISEASE IN VETERANS

- About 1 in 6 Veterans has chronic kidney disease. The condition affects some 500,000 VA patients nationwide.
- Veterans with kidney disease are at higher risk for strokes, heart attacks, heart failure, hospital stays, and medication complications.
- VA spends more than \$18 billion each year on the care of patients with kidney disease.
- Kidney disease is a “silent” disease until very advanced stages, when it is no longer treatable.



- **Urine albumin** is a great test for detecting early kidney disease, but too few Veterans undergo urine albumin screening. This is true even when they have major risk factors for kidney disease, like diabetes, hypertension, or heart disease.

THE PROBLEM WITH CURRENT TESTS

Early detection and treatment keep kidney disease from getting worse and causing serious complications. However, there are problems with both tests that are commonly used to detect kidney disease:

- **Estimated glomerular filtration rate (eGFR)** is currently based on the blood creatinine test. But creatinine gives misleading results in many cases. This can occur with Veterans who have low or high muscle mass, low physical activity, or poor food intake. It can also occur with those who have had amputations or take certain medications. Creatinine also requires adjustment for race to be accurate.

THE SOLUTION: A MULTIPRONGED APPROACH

VA researchers are working to offer clinicians better tools for kidney disease testing and treatment. The effort has three main parts:

- **Provide a better marker of kidney function.** Cystatin C, which has been clinically validated by VA researchers and recommended by national kidney guidelines, is an alternative blood test for eGFR. It has several advantages over creatinine:
 - » Cystatin C is not affected by muscle mass, physical activity, nutritional intake, or amputation.

- » Fewer drugs bias cystatin C results, compared with creatinine.
- » Cystatin C measures kidney function equally well across races.
- » Cystatin C predicts complications of kidney disease – like heart disease and mortality – far better than creatinine.

VA aims to have cystatin C testing available for all Veterans, when clinically indicated, and anticipates that at least one VA clinical laboratory within each region will be able to perform cystatin C testing by September 2022.

- **Increase urine albumin testing** in primary care for all Veterans with diabetes, hypertension and cardiovascular disease.
- **Promote an integrated approach to treatment.** Kidney disease usually occurs in combination with diabetes, hypertension or cardiovascular disease. Effective treatment requires integration of therapies across these conditions.

CASCADE OF CARE (C3) RESEARCH INITIATIVE

Through funding from VA's Health Services Research and Development Service and in collaboration with the VHA Nephrology Program, VA researchers in San Francisco, San Diego, Houston, and Durham have launched the CKD Cascade of Care (C3) Research Initiative. The study aims to determine ways to improve kidney disease