Researcher details risk factors for chronic kidney disease and barriers for early detection

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The community-based research on kidney disease screenings and risk factors is coordinated by affiliate researcher Amber Paulus, Ph.D., R.N. Credit: VCU School of Nursing
About 90% of people living with a condition that is one of the leading causes of death in the United States are unaware that they have it.

Chronic kidney disease (CKD) affects nearly 37 million people across the country. It causes damage to the organ, preventing it from keeping you healthy by filtering blood.

Raising awareness about CKD is a passion for Amber Paulus, Ph.D., R.N., an affiliate researcher with Virginia Commonwealth University's School of Nursing.

"The major barrier to addressing kidney disease is general awareness. Because the disease can progress silently and doesn't exhibit major symptoms until it is advanced, most people don't realize anything is wrong," Paulus said.

Paulus is leading a study in Richmond's East End—a neighborhood known for having high health disparities—that provides residents with educational programming about the condition, evidence-based social and CKD risk screenings, and increase referrals to clinicians for further care.

Paulus spoke with VCU Health News about risk factors for CKD and barriers to early detection and screenings.

**What are the most common risk factors for developing chronic kidney disease?**

I call this the trifecta: high blood pressure, high blood sugar (diabetes), and obesity. Outside of these three primary factors, several other conditions significantly impact kidney disease risk, including:

- Smoking
Heart disease
Age over 60 years
Family history of chronic kidney disease or kidney failure/being on dialysis
Personal history of acute kidney injury

What are the early signs and symptoms of chronic kidney disease that individuals should be aware of?

Evidence has shown that minority groups have an increased risk for CKD.

CKD is often called a "silent disease" because it can have few or no symptoms. In fact, you can lose up to 90% of your kidney function before experiencing any noticeable symptoms.

As the disease progresses, individuals may experience:

- Muscle cramps
- Loss of appetite
- Swelling in the feet and ankles
- Dry, itchy skin
- Shortness of breath
- Trouble sleeping
- Foamy urine
- Changes in urination patterns (either too much or too little)

What are the primary methods for diagnosing chronic kidney disease in its early stages?

Individuals who have a primary care doctor can be screened for risk factors, ensuring they receive appropriate treatment to prevent chronic
kidney disease. Controlling common causes like hypertension and diabetes is crucial. Additionally, two tests can identify kidney disease using blood and urine:

- **Blood Test:** This test assesses the glomerular filtration rate (GFR), which measures how well your kidneys are filtering your blood.
- **Urine Test:** This test checks the albumin-to-creatinine ratio. Albumin is a protein that can pass into the urine when the kidneys are damaged.
- Regular screenings and early detection are key to preventing and managing chronic kidney disease effectively.

**What are the long-term health outcomes for individuals with chronic kidney disease?**

CKD is a progressive disease that increases the risk of cardiovascular disease, mortality, and morbidity. It is the 9th leading cause of death in this country. Advanced CKD can lead to:

- Bone and mineral disorders (weak and brittle bones)
- Mental health conditions (depression and anxiety)
- Fluid buildup (swelling in feet and ankles)
- Increased risk of infection due to a weakened immune system

**Are there relationships between chronic kidney disease and other chronic conditions?**

Yes, CKD and heart disease are linked and share common risk factors, including diabetes and hypertension. Each condition can lead to or worsen the other.
What are some of the barriers to early detection and diagnosis of chronic kidney disease in the general population?

The major barrier to addressing CKD is general awareness. Because the disease can progress silently and doesn't exhibit major symptoms until it is advanced, most people don't realize anything is wrong. Additional barriers to screening for CKD include:

- **Patient-related factors:** Financial hardships, poor health-seeking behavior, and limited knowledge and awareness.
- **Health care-related factors:** Work overload and ineffective communication between patients and health care providers.
- **System/policy-related factors:** Lack of laboratory supplies, lack of primary care providers, lack of guidelines, and poor medical record keeping and documentation.

What does the process of screening for chronic kidney disease involve, how intensive is it, and how frequently do you recommend someone undergo screening?

A basic blood and urine screening takes about 10 minutes, or 20 minutes including thorough education about the findings. Initially, we conduct a test to assess the results, and if an individual's lab values show evidence of disease, we schedule a follow-up in three months to verify that the initial result was not a fluke.

CKD is defined as kidney damage or an estimated glomerular filtration rate less than 60 ml/min/1.73 m², persisting for three months or more. Kidney damage is assessed by detecting albuminuria, which involves
measuring a urine albumin-creatinine ratio of $\geq 30$ mg/g (μg/mg). Albuminuria is one of the first signs of kidney disease and, if left untreated, may progress to kidney failure.

**How can community-based screenings improve early detection rates for chronic kidney disease?**

Community-based screenings can improve early detection of CKD by targeting high-risk populations and providing opportunities to access care. The screening is just the beginning; it creates awareness of each individual's health status. From there, we can build referrals to ensure individuals stay on the path to health rather than waiting for the disease to become significantly advanced.

**Once an individual is diagnosed with chronic kidney disease, what are the interventions and how effective are they at managing the condition?**

Early detection is the most effective way to manage CKD. If detected early, changes to diet and medication can help slow or prevent its progression. Newer drugs, such as SGLT2 inhibitors, are showing promise in protecting the kidneys, slowing the progression of kidney disease, and reducing the risk of death from cardiovascular disease.

Provided by Virginia Commonwealth University


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