

Acute kidney injury linked to pre-existing kidney health, study finds

May 11 2015



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

Physicians treating hospitalized patients for conditions unrelated to the kidneys should pay close attention to common blood and urine tests for kidney function in order to prevent incidental injury to the organs that help cleanse the body of toxins, new Johns Hopkins Bloomberg School

of Public Health-led research suggests.

The findings, published this month in two studies in the *American Journal of Kidney Diseases*, suggest that while being older, male, African-American or having diabetes are risk factors for developing acute [kidney injury](#), the strongest risk factor is even mildly abnormal results on tests of [kidney function](#).

Acute kidney injury - a sudden loss of kidney function, which can develop as quickly as a few hours or over the span of a few days - occurs in up to 10 percent of hospitalized patients and up to 22 percent of intensive care unit patients worldwide. And its incidence has increased over the past two decades. Researchers say that this type of injury, which can lead to irreversible kidney damage, is often caused inadvertently during a patient's medical care, either through the prescription of certain medications, the use of medical tests requiring iodine contrast or the effects of dehydration.

"Once a patient suffers an acute kidney injury, we have no effective treatment, so it is important to focus on prevention whenever possible," says Morgan E. Grams, MD, PhD, an assistant professor of epidemiology at the Bloomberg School and a co-author on both of the studies. "Our research tells us that regardless of why someone is in a doctor's care, that doctor needs to pay very close attention to these basic markers of kidney function."

Researchers analyzed data from more than 1.3 million patient records, including 18,567 patients who developed acute kidney injury. They explored a number of factors including results from tests measuring eGFR (estimated glomerular filtration rate), or how well the kidneys are cleaning the blood, and one measuring albuminuria, or the amount of protein found leaking from the kidneys into the urine. The researchers with the Chronic Kidney Disease Prognosis Consortium based at the

Bloomberg School found that reduced eGFR rates and elevated albuminuria levels were the strongest risk factors for kidney injury.

It makes biological sense, Grams says, that abnormally functioning kidneys would be more susceptible to kidney injury. But, she adds, physicians treating patients for other conditions may not be as attuned to kidney function when their focus is elsewhere and they may not think about kidney risk in younger patients, for example. She says she hopes this new research reminds doctors to consider the kidneys, especially since this potentially devastating injury is often preventable.

For example, doctors could steer clear of certain medications for patients with abnormal eGFR and albuminuria, regularly test for albuminuria before surgery or, when possible, avoid giving medical tests requiring iodine contrast.

Acute [kidney injury](#) is associated with adverse outcomes such as prolonged hospital stays, the beginnings of [chronic kidney disease](#), end-stage [kidney disease](#) and mortality.

"Reducing [acute kidney injury](#) worldwide can be accomplished simply by paying close attention to the kidney levels of [patients](#) in hospitals and ICUs," says Grams, who is also an assistant professor of nephrology at the Johns Hopkins University School of Medicine. "It may really be that simple."

More information: "A Meta-analysis of the Association of Estimated GFR, Albuminuria, Age, Race, and Sex with Acute Kidney Injury" was written by Morgan E. Grams; Yingying Sang; Shoshana H. Ballew; Ron T. Gansevoort; Heejin Kimm; Csaba P. Kovesdy; David Naimark; Cecilia Oien; David H. Smith; Josef Coresh; Mark J. Sarnak; Benedicte Stengel and Marcello Tonelli.

"A Meta-analysis of the Association of Estimated GFR, Albuminuria, Diabetes Mellitus and Hypertension with Acute Kidney Injury" was written by Matthew T. James; Morgan E. Grams; Mark Woodward; C. Raina Elley; Jamie A. Green; David C. Wheeler; Paul de Jong; Ron T. Gansevoort; Andrew S. Levey; David G. Warnock and Mark J. Sarnak.

Provided by Johns Hopkins University Bloomberg School of Public Health

Citation: Acute kidney injury linked to pre-existing kidney health, study finds (2015, May 11) retrieved 7 May 2024 from

<https://medicalxpress.com/news/2015-05-acute-kidney-injury-linked-pre-existing.html>

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