

Study identifies biomarkers that can provide advance warning of deadly kidney condition

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A national, multi-center study led by University of Pittsburgh researchers found biomarkers that can tell a physician if a patient is at risk for acute kidney injury (AKI), a condition that often affects those in intensive care and can occur hours to days after serious infections, surgery or taking certain medications.

The results, now available online in the *American Journal of Respiratory and Critical Care Medicine*, validates previous research from this group identifying the [biomarkers](#), known as tissue inhibitor of metalloproteinase 2 (TIMP-2) and insulin-like growth factor binding protein 7 (IGFBP-7) in urine, that signal the kidneys are stressed and at risk for failing. The biomarkers are indicators of cell damage, a key component in the onset of AKI.

"AKI remains one of the most common complications among [critically ill patients](#), affecting up to 7 percent of all hospitalized patients, yet we lack a precise and reliable method of discerning risk," said senior investigator John Kellum, M.D., a [critical care](#) physician at UPMC and director of the Pitt Center for Critical Care Nephrology. "By providing actionable information, this study advances the translation of biomarker technology into routine practice."

Investigators enrolled 420 critically ill patients. The primary analysis assessed the ability of the biomarkers to predict moderate to severe AKI within 12 hours of test measurement. To confirm the findings, a committee of three independent expert nephrologists who were blinded

to the results of the test reviewed the cases to diagnose AKI.

AKI is asymptomatic, lacking warning signs such as pain, shortness of breath or other clinical symptoms, particularly in the early stages when intervention is most beneficial. The incidence of AKI is high among critically ill patients, with up to 50 percent developing some degree of AKI during their illness, increasing the risk of death due to kidney failure.

"This new study confirms these findings using an expert panel to adjudicate AKI—the first ever to do so for this disease," said Dr. Kellum.

More information: "Validation of *Cell-Cycle Arrest Biomarkers* for Acute Kidney Injury Using Clinical Adjudication." Azra Bihorac, Lakhmir S Chawla, Andrew D Shaw, Ali Al-Khafaji, Danielle L Davison, George E DeMuth, Robert Fitzgerald, Michelle Ng Gong, Derrel D Graham, Kyle Gunnerson, Michael Heung, Saeed Jortani, Eric Klerup, Jay L Koyner, Kenneth Krell, Jennifer LeTourneau, Matthew Lissauer, James Miner, H Bryant Nguyen, Luis M Ortega, Wesley H Self, Richard Sellman, Jing Shi, Joely Straseski, James E Szalados, Scott T Wilber, Michael G Walker, Jason Wilson, Richard Wunderink, Janice Zimmerman, and John A Kellum. *American Journal of Respiratory and Critical Care Medicine*, [www.atsjournals.org/doi/abs/10 ... -0077OC#UxXkGPldXfL](http://www.atsjournals.org/doi/abs/10.1164/rccm.201403-0077OC#UxXkGPldXfL)

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