

# Study links biomarkers to long-term kidney damage and death in critically ill

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High levels of two novel urinary biomarkers early in critical illness are associated with adverse long-term outcomes in patients with acute kidney injury (AKI), according to an international, multi-center study led by University of Pittsburgh School of Medicine Researchers. AKI is 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, available online in the *Journal of the American Society of Nephrology*, show that the combination of tissue inhibitor metalloproteinase-2 (TIMP-2) and IGF-binding protein-7 (IGFBP7) can identify [patients](#) with AKI who are at increased risk for death or requiring renal replacement therapy, such as dialysis or kidney transplant, over the next nine months. The two biomarkers are indicators of cell stress and injury, key components in the development of AKI.

AKI is largely 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.

"We found that not only do these biomarkers predict the development of AKI but, at high levels, they also tell us about long-term prognosis," said senior investigator John Kellum, M.D., a critical care physician at UPMC and director of the Center for Critical Care Nephrology at the

University of Pittsburgh. "This should greatly aid clinicians and researchers attempting to address this too-common complication."

Investigators enrolled 692 critically ill patients at 35 medical centers in North America and Europe. The primary analysis assessed the outcomes of patients using an FDA-approved biomarker test, known as NEPHROCHECK, within the first day of arrival into the [intensive care](#) unit. The team found strong associations between the biomarker combination and the risk of renal replacement therapy or death.

Provided by University of Pittsburgh Schools of the Health Sciences

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