

Blood test predicts death from heart problems after surgery

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GRAHAMCOLM

(Medical Xpress) -- A blood test can predict whether patients are likely to die of a heart attack in the month after surgery, according to an international study involving thousands of patients.

The researchers, including a group from Washington University School of Medicine in St. Louis, found that the test could predict risk of death when given during the first three days after an operation. The blood test measures levels of the heart [protein](#) troponin. Elevated troponin levels, an indicator of [heart muscle damage](#), were linked to unexpected cardiac problems and death in the 30 days following non-cardiac [surgery](#).

Preliminary results of the study were reported in the [Journal of the American Medical Association](#).

The researchers will eventually enroll 40,000 [surgery patients](#), but the new research was published after analysis of data from the study's first 15,133 patients.

"After surgery, [heart attack](#) can be a catastrophic

complication," says Washington University's Peter Nagele, MD, lead investigator at the study's only U.S. site. "It's difficult to diagnose a heart attack following surgery because the pain medications patients receive often mask chest pain. This blood test may make it easier to identify patients at the highest risk of death."

Nagele, an assistant professor of anesthesiology and staff physician at Barnes-Jewish Hospital, says doctors typically measure troponin levels in cardiac patients undergoing surgery, but not in patients having other operations, especially if they don't have a known risk for heart problems. But he says initial findings from this study suggest the test should become a standard part of post-operative care.

Worldwide, more than 200 million adults have major non-[cardiac surgery](#) each year, and 1 million plus die within a month of their operations. Among the more than 15,000 patients followed in this study, the 30-day mortality rate was 1.9 percent.

The most common operations in the study were major types of orthopedic surgery, such as total joint replacement, and general surgery, such as abdominal or vascular surgery. All patients in the study were at least 45 years old, received a general or regional anesthetic and remained in the hospital overnight following their operations.

The researchers found that as troponin levels increased, so did death rates in the month after surgery. Among those with the highest post-surgery troponin readings, the 30-day mortality rate was 16.9 percent.

"Surgery is a major stress test," Nagele says. "You are exposing someone to a major trauma, and those patients tend to be at a higher risk for heart attack. The presence of troponin in the blood represents a 'red flag' for potential problems during the first 30 days, and perhaps the first year

following a major operation."

As the study continues, newly enrolled [patients](#) will receive an updated version of the [blood test](#) that has been found to be more accurate and sensitive. That test is not yet FDA-approved for general use in the United States.

"Both tests measure the same proteins, but the new one has a higher degree of sensitivity," he says. "Now we want to know whether we can measure changes in troponin levels before and after surgery."

Looking ahead, Nagele says it should be possible to more accurately determine how surgery contributes to heart attacks and other [cardiac problems](#).

More information: The Vascular Events in Noncardiac Surgery Patients Cohort Evaluation (VISION) Study Investigators. Association between postoperative troponin levels and 30-day mortality among patients undergoing noncardiac surgery. *JAMA*, vol. 307 (21), pp. 2295-2304, June 5, 2012.

Provided by Washington University School of Medicine in St. Louis

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