

# Troponin linked to increased risk of death

November 3 2017

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A blood test that measures the presence of heart specific proteins called troponins is used by A&E hospitals to diagnose myocardial infarction in patients with chest pain. But even normal levels of the protein in patients without infarction increase the risk of death, a study from Karolinska Institutet published in the renowned *Journal of the American College of Cardiology* shows. Patients with measurable troponin levels should therefore be investigated, suggest the researchers.

Troponins leak into the blood and become measurable in blood samples taken from [patients](#) with acute conditions, such as [myocardial infarction](#) or pulmonary embolism. However, even chronic leakage can give rise to measurable levels, such as in the elderly or in the event of chronic kidney disease and severe heart failure.

"We know that a large group of patients have chronically higher levels than 14 ng/l, which is the normal upper limit," says study leader Martin Holzmann, docent at Karolinska Institutet's Department of Medicine, Solna and physician at Karolinska University Hospital. "This group is larger than the number of [heart attack patients](#), but so far such findings have not led to any action being taken since we don't know enough about the risks that elevated levels entail."

## Chronically elevated troponin levels

To ascertain how chronically elevated [troponin levels](#) affect the risk of [death](#) and [heart disease](#), the researchers reviewed the medical records of all patients over 25 years of age who sought medical attention at the

emergency clinic at Karolinska University Hospital in Huddinge or Solna with chest pain for the first time between the years 2011 and 2014. At least two registered [troponin](#) measurements were required during the three-year follow-up period for them to qualify for the study. Patients with severe kidney disease, [acute myocardial infarction](#) or other acute conditions were excluded, leaving just over 19,000 patients.

Complementary data were then sourced from the National Board of Health and Welfare's patient, prescribed drug and cause of death registers.

The researchers found that just under ten per cent of the patients had above normal troponin levels, and that half of them had no previously diagnosed heart condition. A third had a troponin level of 5–14 ng/l, which is seen as normal but which proved to be strongly linked to death. In the 5–9 ng/l range, the risk of death was double that of the control group, which had immeasurable troponin levels. In the 10–14 ng/l range, the risk was three times as high. Of those who had a troponin level above 50 ng/l, one third died within the first year of follow-up. Measurable troponin levels were also associated with a high risk of myocardial infarction and an even higher risk of heart failure.

## **Good risk marker for heart disease**

"As we can see, troponin is a good risk marker for heart disease and death," says Dr Holzmann. "Patients with measurable troponin levels should therefore be examined. It may be suitable for these patients to be referred by their general practitioner for echocardiography, which can reveal [heart](#) disease. And the troponin test can be used to identify which patients need to be treated for hypertension, for example, or high cholesterol. We have to get better at evaluating patient risk, especially in primary care."

**More information:** Andreas Roos et al. Stable High-Sensitivity

Cardiac Troponin T Levels and Outcomes in Patients With Chest Pain,  
*Journal of the American College of Cardiology* (2017). [DOI:  
10.1016/j.jacc.2017.08.064](https://doi.org/10.1016/j.jacc.2017.08.064)

Provided by Karolinska Institutet

Citation: Troponin linked to increased risk of death (2017, November 3) retrieved 3 May 2024  
from <https://medicalxpress.com/news/2017-11-troponin-linked-death.html>

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