Novel point-of-care heart attack test leads to shorter emergency department stays for some patients

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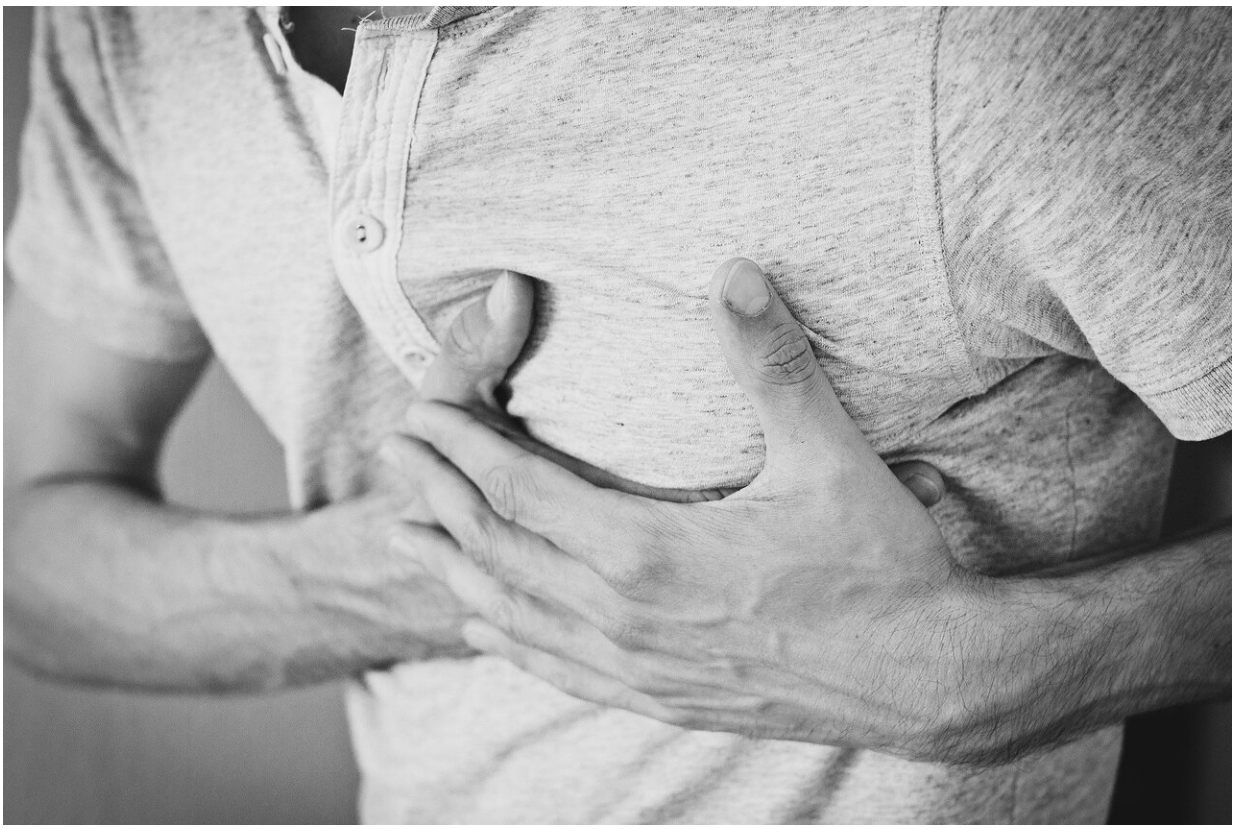

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A new, rapid blood test that spots whether people are having a heart attack could improve the treatment of people presenting with chest pain

at emergency departments, according to late-breaking research presented in a Hot Line Session Sept. 2 at this year's ESC Congress 2024.

"This simple test only requiring a drop of blood can be performed within eight minutes without the need for a laboratory," said author Viola Thulin from Haukeland University Hospital, Bergen, Norway. "Use of point-of-care testing on arrival at hospital has the potential to speed up earlier diagnosis or rule out heart attack and reduce the amount of time some patients spend in the emergency department."

Overcrowding in emergency departments is a costly and concerning global problem, and is associated with increased death and illness. One of the most common causes of hospitalization worldwide is chest pain. The majority of patients with chest pain have prolonged hospital stays during which they undergo testing to rule out acute coronary syndrome (ACS), yet 60%–70% of patients are found to have a benign cause of chest pain, such as gastroesophageal reflux.

Accelerated diagnostic protocols are recommended for fast triage and safe early discharge of low-risk chest pain patients. These include the diagnostic gold standard high sensitivity cardiac troponin (hs-cTn) test for patients presenting with suspected ACS. The test measures levels of a protein called troponin, which is released by injured heart cells in the blood.

Conventional "rule out" or "rule in" hs-cTn testing is done using two blood samples taken at presentation and 1–3 hours later, with a turn-around time of approximately 60 minutes. However, point-of-care (POC) testing could provide results more rapidly than routine central lab testing.

The WESTCORPOC randomized clinical trial compared the efficacy and safety of a 0-hour and 1-hour novel POC hscTn test (Atellica VTLi,

Siemens Healthineers) with conventional 0-hour and 1-hour central laboratory hscTn testing. The POC test had previously been shown to have similar accuracy and precision to standard central laboratory testing.

In total, 1,494 consecutive adult patients (median age 61 years; 43% female) with symptoms suggestive of ACS presenting to the emergency department at Haukeland University Hospital from March 2022 to March 2024 were randomized to either the novel POC test with a turn-around time of eight minutes (728 patients) or standard central lab testing (766 patients).

Patient characteristics were similar between the groups. Patients were admitted or discharged based on the judgment of the attending physician.

The researchers found that the median (average) length of stay in the emergency department was 174 minutes for the POC testing group compared to 180 minutes in the standard testing group.

However, among patients who were seen more quickly by a physician (within 60 minutes), POC testing reduced the length of stay in the emergency department by 15 minutes (147 vs. 162 minutes).

Notably, POC testing provided the most benefit for patients diagnosed with non-ST-elevation myocardial infarction (NSTEMI), shortening emergency department stay by on average 43 minutes compared to the standard test (median 137 vs. 180 minutes), with these high-risk patients being admitted to the cardiac ward faster.

Nevertheless, the percentage of patients discharged within 3h and 6h, and total length of hospital stay, were similar between the groups (16% POC vs. 15% standard; 38% both groups; 21h POC vs. 20h standard

respectively).

POC testing did not come at the expense of patient safety, with rates of combined deaths, heart attacks, and acute revascularizations within 30 days similar between the groups (11.4% POC vs. 9.4% laboratory).

Importantly, the prevalence of combined heart attack, death and acute revascularization from discharge to 30 days follow-up were also similar between the groups (0.8% POC and 0.5% laboratory), indicating that both pathways have high and similar safety, with very few patients experiencing events after being discharged.

"POC troponin assays hold great promise to improve patient care. But our findings underscore the need for a process to map out and address obstacles to efficient patient flow, such as lack of relevant staff or lack of efficient discharge procedures, to realize the full potential of POC tests to manage chest pain patients in the emergency department," said lead author Dr. Kristin Aakre from Haukeland University Hospital.

"Future research should focus on the utility and implementations of these tools in out of hospital settings like ambulances and primary care emergency care clinics or offices."

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