New test set to improve care for patients with suspected heart attack

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Manchester researchers have developed a novel approach, called the Manchester Acute Coronary Syndromes Decision Rule, to more quickly and effectively diagnose heart attack in patients admitted to emergency departments.

Chest pain is the most common reason for emergency hospital admission. In Manchester, the incidence of premature death due to heart disease and stroke is amongst the highest in England. The decision rule has the potential to safely reduce unnecessary hospital admissions, and more appropriately allocate time and resource to patients who need help most.

The study published today in the international, peer-reviewed medical journal, *Heart*, indicates that using the simple decision rule will help doctors to make more accurate decisions based on a patient's symptoms and the results of simple blood tests. This could reduce the need for patients to be unnecessarily admitted to hospital for further tests, and rapidly identify the highest risk patients, so that they can receive appropriate treatments more quickly.

The researchers from Manchester Royal Infirmary, Stockport NHS Foundation Trust, The University of Manchester, and Manchester Metropolitan University, discovered that the decision rule could allow more than one in four patients with chest pain to be safely and immediately discharged from the emergency department. In contrast, the decision rule also accurately classifies around one in ten patients with

chest pain as 'high risk', enabling them to receive more intensive treatment at an early stage and to be treated in a specialist area such as a coronary care unit.

Clinicians have been using the results of blood tests to detect heart attacks for some time. The most widely used test, which detects a protein called troponin, can identify nine out of ten heart attacks when patients first arrive in the emergency department. However, it can take several hours for troponin levels to rise in the blood after a heart attack, which means that many patients are admitted to hospital to wait for later tests. Most of these later tests show normal results, so the availability of an accurate test that can be undertaken earlier in the process has the potential to avoid many unnecessary hospital admissions.

The decision rule combines the results of the first troponin test with levels of another protein that may detect earlier signs of heart damage: heart-type fatty acid binding protein. It also takes into account a patient's symptoms and the findings from the electrocardiogram (ECG), which shows the flow of electricity through the heart. Using a simple computer program, doctors can determine from the decision rule the chance that a patient is having a heart attack. This research found that none of the patients who were identified by the decision rule as being safe to discharge from the emergency department had a heart attack. In contrast, over 95 per cent of the patients in the 'high risk' category had a heart problem.

Dr Rick Body, Consultant in Emergency Medicine at Manchester Royal Infirmary and Honorary Lecturer in Cardiovascular Medicine at The University of Manchester, who led the study said, "This study could potentially make a huge difference to the way we diagnose heart attacks and the subsequent treatment options for our patients.

We have now tested the accuracy of the rule in more than 1100 patients

by observing what could have happened if we'd have used the decision rule instead of providing our routine care. This study provides the safety and effectiveness evidence required for us to start using the decision rule to guide patient care. In the next phase of our work we will carefully study the potential benefits of the decision rule for both patients and the NHS".

More information: "The Manchester Acute Coronary Syndromes (MACS) decision rule for suspected cardiac chest pain: derivation and external validation." Richard Body, Simon Carley, Garry McDowell, Philip Pemberton, Gillian Burrows, Gary Cook, Philip S Lewis, Alexander Smith, Kevin Mackway-Jones. *Heart* heartjnl-2014-305564Published Online First: 29 April 2014 DOI: 10.1136/heartjnl-2014-305564

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