

Heart attack blood test sensitive enough to be used in portable device

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A new blood test being developed to diagnose heart attacks could one day be carried out on a simple handheld device, giving a rapid diagnosis in A&E departments without the need for samples to be sent to a lab, according to new research presented today at the British Cardiovascular Society Conference in Manchester.

The new [test](#) uses similar technology to the troponin test, but analyses the level of a protein called cardiac myosin-binding protein C (cMyC). Levels of cMyC in the [blood](#) increase more rapidly after a [heart attack](#), and to a higher extent, than troponin, meaning that the test can rule out a [heart](#) attack in a higher proportion of [patients](#) straight away.

The international team, part-funded by the British Heart Foundation, took blood from 776 patients traveling to hospital by ambulance in Denmark. Researchers based at King's College London then tested these samples for cMyC protein.

In patients who did suffer heart attacks, the protein was present in high enough concentrations 95 per cent of the time for an on-the spot diagnosis. Importantly, the cMyC test outperformed the existing troponin test, which was only capable of diagnosing around 40 percent of patients in this way. This is mainly because troponin takes longer to reach detectable levels in the blood after you suffer a heart attack.

The researchers now hope to work with industry to create a portable testing device to be used in UK A&E departments, and in ambulances in countries where these have to drive considerable distances to get patients to their nearest hospital. A simple handheld device could replace the time-consuming processes involved in sending samples to the hospital labs for analysis.

It is estimated that over two thirds of people who attend A&E complaining of chest pain have not had a heart attack. But all will receive two tests: a heart test called an ECG and a [blood test](#) to measure the levels of a protein called troponin.

Under current guidelines, people suspected of having a heart attack are tested for high blood troponin levels as soon as they arrive in an A&E, and again after three hours. Depending on the type of troponin test used,

up to 85 per cent of people will need to remain in hospital for further tests in order to rule out a heart attack.

The cMyC blood test, developed by a team from King's College London and tested across Europe, has already been shown to rapidly rule out a heart attack in more people than the standard troponin test. This could reassure worried patients in A&E departments, free up bed space and save hundreds of thousands of pounds per UK hospital every year.

Dr. Tom Kaier, one of the lead researchers, funded by the British Heart Foundation at St Thomas' Hospital, London said:

"It is important for both patients and doctors to work out early who has had a heart attack and who hasn't.

"Now that we know that this test is sensitive enough to give an almost immediate heart attack diagnosis, we need to work on developing a testing device. We'd love to see this used in A&E departments within the next 5 years."

Professor Jeremy Pearson, Associate Medical Director at the British Heart Foundation, said:

"Big heart attacks are often easy to diagnose with an ECG but smaller heart attacks, which are more common and also life-threatening, are more challenging. The troponin test has been used for around 20 years and is currently the most powerful tool we have for diagnosing such heart attacks, but there is always room for improvement.

"These initial results with the cMyC test look very promising for patients, who could be more quickly diagnosed and treated or reassured and sent home. However, further research is necessary before it can be recommended as a replacement for the [troponin](#) test."

Provided by British Heart Foundation

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