

Hospital visit for chest pain not always necessary

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Key Question

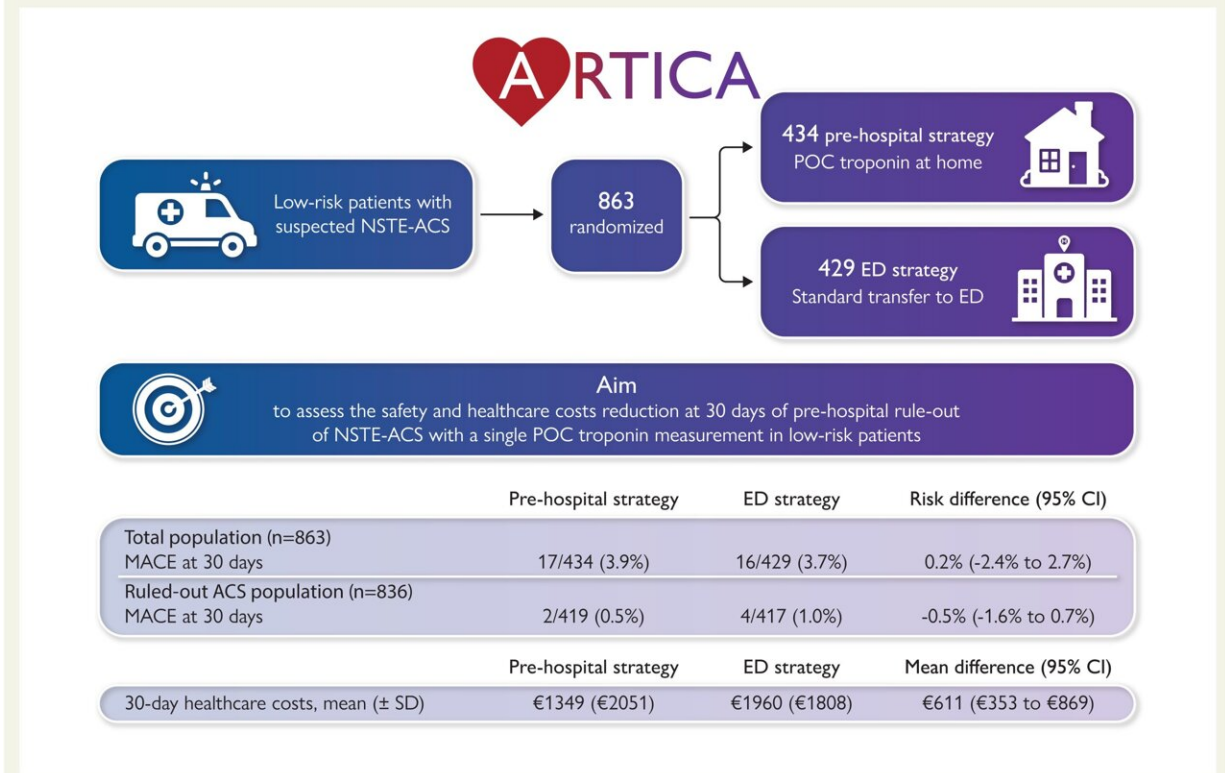
What is the impact on 30-day healthcare costs and incidence of major adverse cardiac events of pre-hospital rule-out of non-ST-segment elevation acute coronary syndrome (NSTEMI-ACS) with a single point-of-care troponin in low-risk patients, as compared to transfer to the emergency department (ED)?

Key Finding

- Mean 30-day healthcare costs were significantly lower (-€ 611) in the pre-hospital strategy.
- Incidence of 30-day major adverse cardiac events was comparable between groups.
- In patients with ruled-out NSTEMI-ACS, the risk of major adverse cardiac events was very low.

Take Home Message

Pre-hospital rule-out of NSTEMI-ACS in low-risk patients leads to a significant reduction in healthcare costs and is associated with a very low incidence of major adverse cardiac events.



Credit: *European Heart Journal* (2023). DOI: 10.1093/eurheartj/ehad056

In the Netherlands, ambulances transport about 200,000 people with chest pain to Emergency Departments (ED) every year. However, up to 90% of these people don't have an acute coronary syndrome.

Cardiologists at Radboud University Medical Center studied the possibility of initially examining these patients at home, and only transporting them to the [hospital](#) in case of a high risk of acute coronary syndrome (elevated [troponin](#)). The results show that hospital visits are often unnecessary and costly.

The findings are published in the *European Heart Journal*.

Low risk of acute coronary syndrome

Nearly 900 people with chest pain participated in the study. Ambulance professionals assessed the risk of an acute coronary syndrome based on the HEAR-score, including history, electrocardiogram [ECG], age and risk factors. Patients with a high risk for an [acute coronary syndrome](#) were directly transported to the hospital. In patients with a low risk HEAR score, [ambulance](#) paramedics performed a pre-hospital troponin measurement. The protein troponin is released when the heart is damaged, and is an indication of a heart attack.

Were troponin levels high? Then the patient went straight to the hospital. But if the troponin level was low, then the patient remained at home, provided with further instructions such as contact with the [general practitioner](#). All patients were followed up to 30 days after the event. The researchers investigated whether a major adverse cardiac event (MACE) occurred during that period.

The chance of MACE was very small. In the patient group that stayed at

home with a low troponin level, a major heart problem occurred in 0.5% of cases, in the group that went to the hospital with a low troponin level this was 1.0%. Physician-researcher Joris Aarts says, "Patients with a low risk of myocardial infarction can generally stay at home safely. This is good news, because an emergency ambulance ride and hospitalization are major events with high costs. Now we know that it is often unnecessary."

Reducing health care costs

In addition, this new analysis at the patient's home reduces health care costs. The researchers calculated that it reduces more than 600 euros per patient if they stay out of the hospital. Cardiologist and lead researcher Cyril Camaro says, "If we introduce this throughout the Netherlands, it will save up to 48 million euros on an annual basis. The Dutch Integral Healthcare Agreement insists on more efficient care. We all have a role in this."

He also emphasizes better deployment of [ambulances](#). "We are deploying ambulance staff more intelligently. Moreover, despite the pre-hospital troponin measurement, they are more quickly available for a new patient because they don't have to transport every patient to the ED."

Finally, this approach can also be a solution in the growing problem of overcrowding Emergency Departments. Camaro states, "In this study, we collaborated with many colleagues. We had to, because a possible change in policy affects everyone: the patient, the ambulance staff, [general practitioners](#), [emergency physicians](#) and cardiologists. That's why we have to do it together."

For the next years Camaro is focused on putting this topic on the national agenda. Recently, a national consortium meeting was initiated to

discuss this important theme. Hopefully more collaboration and (randomized) studies on pre-hospital rule out strategies will follow and in the end to implement the best pre-hospital strategy for all our [chest pain](#) patients.

More information: Cyril Camaro et al, Rule-out of non-ST-segment elevation acute coronary syndrome by a single, pre-hospital troponin measurement: a randomized trial, *European Heart Journal* (2023). [DOI: 10.1093/eurheartj/ehad056](#)

Provided by Radboud University

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