



Acute Myocardial Infarction Interventions

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Biomarkers¹

- ECGs are commonly employed to **diagnose** AMIs.^{2,3}
- AMI is diagnosed by:
 - The presence of pathological Q waves on the ECG.
 - New, or seemingly new, significant ST segment T wave changes, or new left bundle branch block.

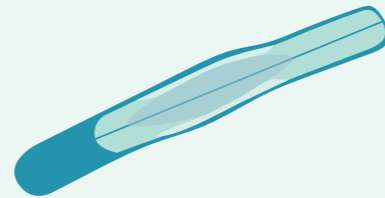


BUT **only 57%** of patients can be correctly diagnosed with this technique.⁴

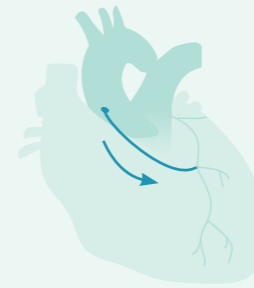
- cTn:¹
 - **Increased cTn concentrations** are now regarded as standard biochemical markers for the diagnosis of AMI.
 - **Measuring** the amount of **cTnT** and/or **cTnI** is regarded as one of the keystones in the diagnosis of myocardial disease.

Interventions^{5,6}

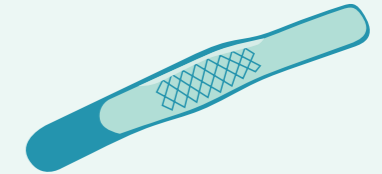
Common



Angioplasty:
a special catheter with an attached deflated balloon is threaded up to the coronary arteries.



Bypass surgery:
Treats blocked arteries using veins or arterial conduits to deliver blood distal to the occluded coronary artery.

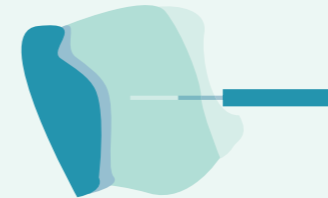


Stent procedure:
a stent is a wire mesh tube that is used to prop open an artery during angioplasty.

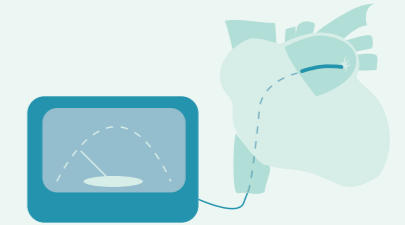
Uncommon



Angioplasty, laser:
similar to an angioplasty, except the catheter has a laser tip that opens the blocked artery.



Transmyocardial revascularisation:
a laser is used to drill a series of holes from the outside of the heart into the heart's pumping chamber.



Radiofrequency ablation:
a catheter with an electrode at its tip is guided through the veins to the heart muscle to destroy carefully selected heart muscle cells in a very small area.

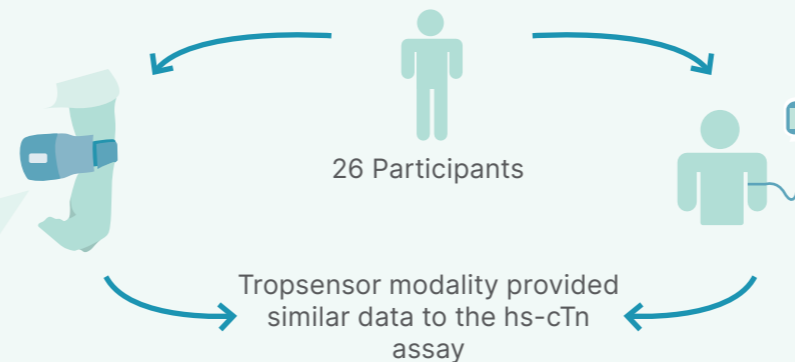
What Is On The Horizon?⁷

- Guidelines recommend the use of **high sensitivity cTn (hs-cTn)** for the diagnosis of acute coronary syndromes.
- Current biochemical biomarker testing relies on handling samples and blood.
 - Turnaround times are often an hour or more.
 - Difficulties include handling blood and/or samples.

- **Tropsensor** provides a non-invasive alternative method to measure hs-cTn without the need to draw blood.
 - The molecular infrared spectroscopy-based transdermal device provides a cTn readout within 5 minutes.
 - Allows for serial measurements without any of the delays or complications of blood.



Study On Tropsensor⁷



Results:

- A Pearson's correlation of **82%** with the hs-cTnI was observed.
- AMI diagnosis:
Sensitivity = 100% Specificity = 50% Accuracy = 84.6%



Significance:

- Accelerate the assessment of patients presenting with chest pain.
- Does not require a blood draw.
- Tropsensor provides a rapid, safe, standardised, and reliable source for cTn, while allowing bedside serial trending.



Potential:

- **Streamline cardiac care workflow** by ruling out many non-cardiac patients, and identifying those with high values who are at risk.
- **Facilitate appropriate patient triage** towards early discharge of emergent treatment.

Key:

AMI: acute myocardial infarctions; cTn: cardiac troponins; cTnI: troponin I; cTnT: troponin T; hs-cTn: high sensitivity cardiac troponins.

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