

# Troponin I

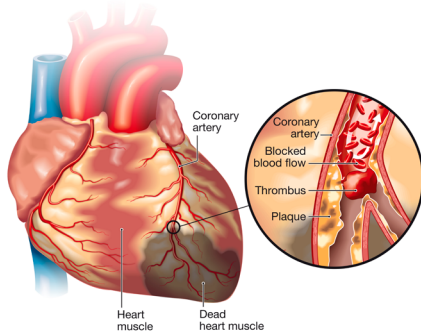
## A specific marker in the diagnosis of myocardial infarction

About 18.6 million people die of cardiovascular diseases (CVD) every year worldwide.<sup>1</sup> Of these more than 7 million are due to coronary heart diseases, like myocardial infarction (MI).<sup>2</sup> Although the incidence of MI has declined in the industrialized nations, in part due to improved health systems and implementation of effective public health strategies, the rates are surging in the developing countries such as South Asia, parts of Latin America, and Eastern Europe.<sup>3</sup>



### Myocardial infarction

Myocardial infarction or heart attack is caused in most cases by blood clots in an arteriosclerotically altered constriction of a coronary vessel. The reduced blood flow results in an insufficient oxygen supply of the heart muscle and consequently to potential myocardial necrosis (figure 1).



The leading symptom of myocardial infarction is acute chest pain, but symptoms may vary between the sexes. Especially in the emergency department, patients suspected of acute coronary syndrome (ACS) are being evaluated with a HEART score that includes the history of the patient, an electrocardiogram (ECG), the patient's age and risk factors as well as testing for elevated concentration levels of troponin in the blood.<sup>4</sup>

Figure 1: Necrotic heart caused by an arteriosclerotic plaque and resulting thrombus.

### Troponin - the recommended biomarker supporting the diagnosis of myocardial infarction

Cardiac troponin (cTn) testing is an essential component in the diagnosis and management of ACS.<sup>5</sup> The determination of troponins in the blood is seen as the gold standard for an early diagnosis of acute myocardial infarction because of their cardiac specificity, the early increase of troponin concentration around 3 hours after the onset of an infarction, and the wide diagnostic window (figure 3).

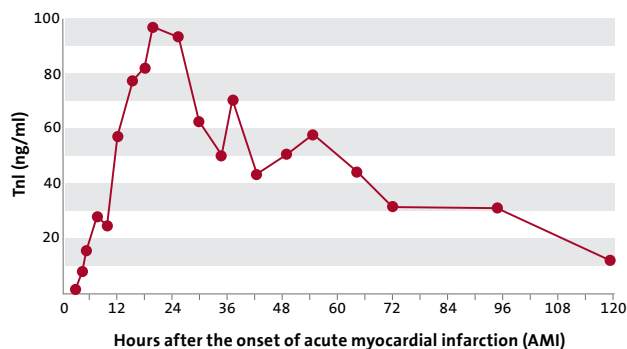


Figure 3: Elevated cardiac troponin I levels appear within 3 hours after the onset of the infarction, followed by a peak at 12-48 hours and normalize after 2 – 3 weeks (modified from Mair J et al.)<sup>6</sup>

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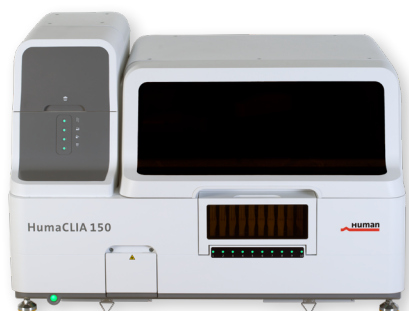
Acute myocardial infarction (AMI) is diagnosed when cTn values are rising and/or falling with at least one value above the 99th percentile upper reference limit (URL) of an apparently a healthy population, together with a high clinical and/or ECG likelihood of myocardial ischemia. Furthermore, blood samples for cTn measurement should be drawn serially, i.e. on first assessment (designated as 0 h) and repeated 3 – 6 h later. <sup>7</sup>

### Summary of indications of Troponin I HumaCLIA SR

- Aid in the diagnosis of myocardial infarction and cardiac muscle damage
- Monitoring of myocardial infarction and cardiac muscle damage



### Product and order information



<b>HumaCLIA 150</b>	REF 15910
Random-access chemiluminescence immunoassay system	
Regulatory status	CE IVDR

<b>Troponin I HumaCLIA SR</b>	REF 85030
Content	2 x 50 tests incl. calibrators
Sample volume	108 µl
Measurement range	0.01 – 50 ng/ml
Reference interval	<0.03 ng/ml (99th percentile)
Cut-off for myocardial infarction is defined by the 99th percentile of the URL of a healthy population.	
Regulatory status	CE IVD

<b>Immunoassay Multi Control</b>	REF 84850
Content	2 levels each with 2 x 3 ml
Regulatory status	CE IVD

### References

1. <https://world-heart-federation.org> (Status 04.04.2022)
2. <https://ncdalliance.org/cardiovascular-diseases-cvd> (Status 04.04.2022)
3. Jayaraj JC et al. Epidemiology of Myocardial Infarction, November 5th, 2018.
4. Brady W et al. The HEART score: A guide to its application in the emergency department. Turkish journal of emergency medicine vol. 18,2 47-51. 14 Jun. 2018.
5. Mahajan VS, et al. How to interpret elevated cardiac troponin levels. Circulation, vol. 124, no. 21, pp. 2350-2354, 22 11 2011
6. Mair J et al. Clinical Significance of Cardiac Contractile Proteins for the Diagnosis of Myocardial Injury, Advances in Clinical Chemistry, Volume 31, 1994, Pages 63-98.
7. Thygesen K et al. Fourth Universal Definition of Myocardial Infarction (2018). Circulation. 2018 Nov 13;138(20)

For more information on chemiluminescence detection technology and the HumaCLIA 150, visit [www.human.de/products/clia](http://www.human.de/products/clia) or use the following QR code:



Website

