



LAB ALERT

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RL

Pathology and Laboratory Medicine

New Test: High-sensitivity troponin-I (hsTnI)

Facility: BMC & JMC

Cardiac troponin I continues as the single, preferred biomarker for the detection of myocardial injury but now is offered in a new high-sensitivity formulation (hsTnI). Results on Li-heparin plasma are reported in whole numbers (ng/L) with sex-specific ranges and flagged abnormal above the 99th percentile (upper reference limit or URL).

High sensitivity assays are defined by $\leq 10\%$ CV at the 99th percentile of a healthy population, able to detect troponin in $>50\%$ of men and $>50\%$ of women, and able to detect a troponin elevation within 3 hours of the onset of chest pain.

Detection of an elevated hsTnI value above the 99th percentile (URL) defines myocardial injury (acute or chronic) and will be flagged as abnormal.

Myocardial injury is considered acute if there is a significant rise and/or fall of hsTnI values upon serial testing every 3 hours. See flowchart for definition of deltas.

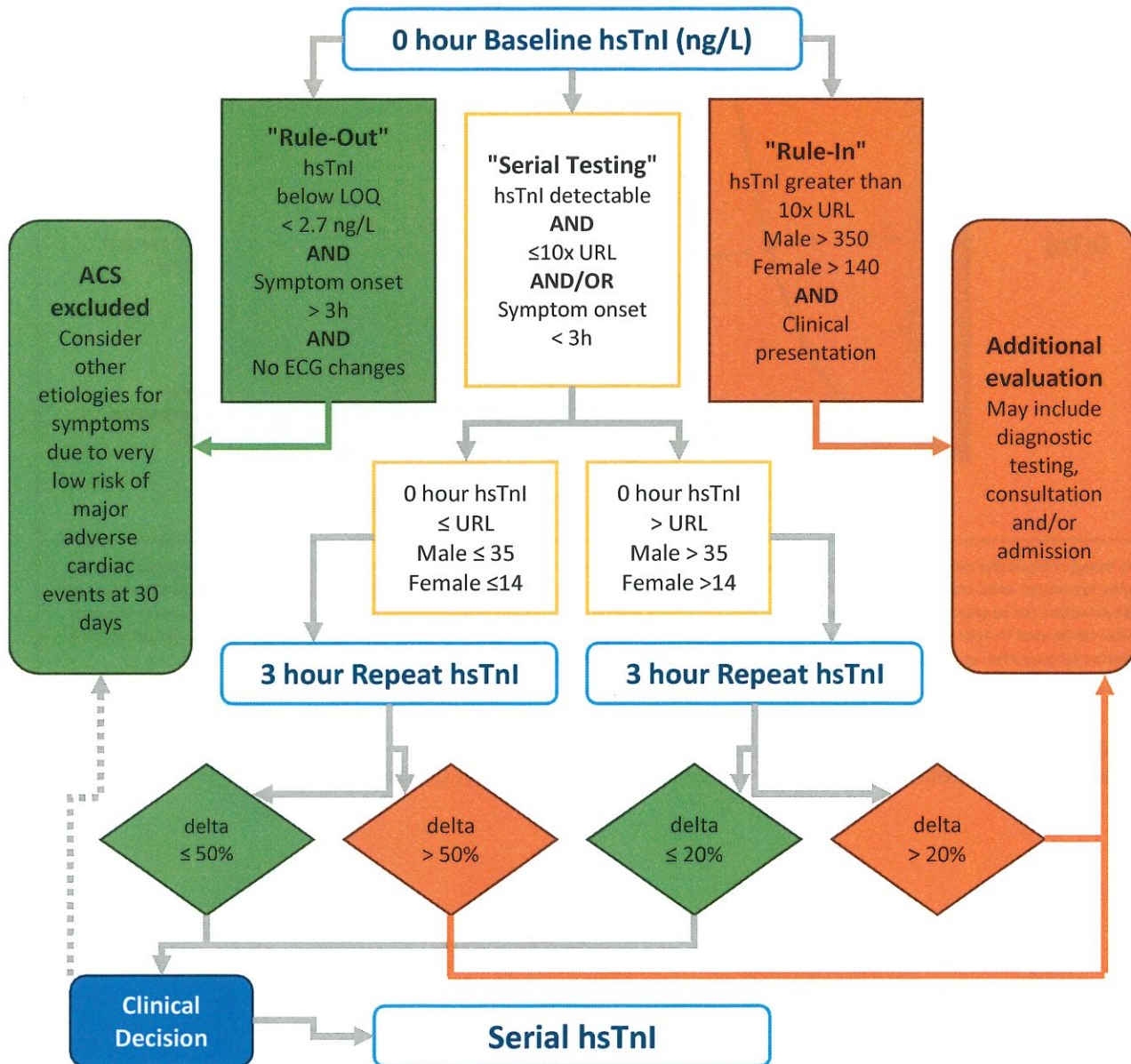
Acute myocardial infarction requires evidence of acute myocardial injury and clinical evidence of myocardial ischemia (e.g., symptoms of myocardial ischemia, new ischemic ECG changes, development of pathological Q waves, imaging evidence of new loss of viable myocardium or new regional wall motion abnormality c/w ischemia, coronary thrombus identified by angiography).

WVU East troponin work group developed the ACS flowchart on the following page for use as a decision tool:

*For questions call BMC Lab at 304-264-1212, option #7, or JMC Lab at 304-728-1759

Effective Date: August 6, 2024

Signs and symptoms concerning for Acute Coronary Syndrome (ACS)



DEFINITIONS

Limit of Quantitation (LOQ): range of values that can be reported, 2.7-60,000 ng/L

Myocardial injury: at least one hsTnI value > URL

URL (99th percentile) defined as Male 35 ng/L and Female 14 ng/L

Acute myocardial injury: myocardial injury **and** significant rise and/or fall on serial testing

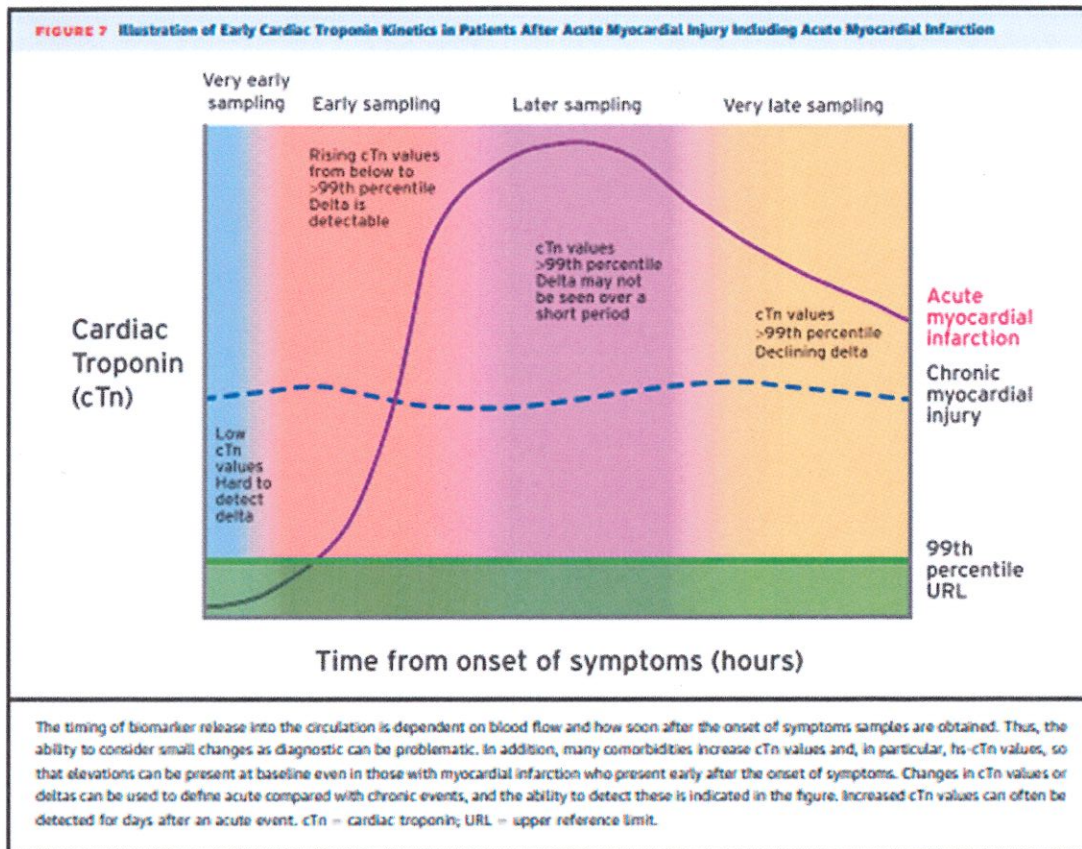
Significant rise 3 hours after normal-range hsTnI is > 50% increase

Significant rise/fall 3 hours after elevated hsTnI is > 20% increase or decrease

Acute myocardial infarction: acute myocardial injury **and** clinical evidence of ischemia



Early Presenters: Note that the early rule-out strategy requires >3 hours from symptom onset to testing, an undetectable hsTnI result, and no ECG changes. If troponin is undetectable and time to presentation is in doubt, consider limited serial testing to exclude an early presentation.



<https://doi.org/10.1016/j.jacc.2018.08.1038>

Fourth Universal Definition of Myocardial Infarction (2018) – Expert Consensus Document

Chronic Myocardial Injury: Just like the outgoing contemporary assay, the new hsTnI assay is not specific to mechanism of cardiac injury (acute ischemia) and will detect troponin elevations associated with chronic etiologies such as renal failure, chronic renal disease, myocarditis, arrhythmias, heart failure, pulmonary embolism, etc.

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