High-Sensitivity Troponin FAQs

Why is UC Health changing its troponin assay to high sensitivity troponin?
High sensitivity troponin testing allows more rapid rule out of myocardial injury due to the increased sensitivity of the test. There is no need to wait hours for troponin levels to rise. Earlier detection saves time for providers and patients. It was approved for use in the United States by the Food and Drug Administration in 2017.

What are the main benefits of the test?
The primary benefit is seen in patients with undetectable troponin levels, allowing providers to be increasingly confident in ruling out myocardial injury. There is improved prognostic ability using the assay.

How safe is it to discharge patients with negative high sensitivity troponin who have ruled out for acute myocardial infarction?
The negative predictive value for MI within 30 days in patients with undetectable high sensitivity troponin and no ischemic ECG changes was 99.8% (95% confidence interval [CI]: 99.7 to 99.9). The negative predictive value for death within 30 days was 100% (95% CI: 99.9 to 100). All patients with chest pain who have an initial undetectable troponin and no signs of ischemia on ECG have minimal risk of MI or death within 30 days and can be safely discharged.\(^{13}\)

What are drawbacks of the new assay?
Because the assay is even better at detecting troponin levels when present in the blood, more patients will have detectable troponin levels. Providers will increasingly need to determine the significance of the troponin value.

How should I interpret elevated troponin levels?
Very high or sharply rising troponin levels should be highly considered to represent acute coronary syndrome in the appropriate clinical context. The clinical scenario will be paramount in interpreting the significance of elevated troponin values. Troponin values that are elevated, even if not rising, are prognostic of worse medium to long-term cardiovascular outcomes.

A stepwise approach to address the unexpected elevated troponin value
Consider the following questions:
1. What is the probability for acute coronary syndrome based on chest pain, symptoms, and EKG findings? (Examples: typical pain, chest pain onset within two hours, ST changes)
2. Does the patient have a readily identifiable non-myocardial infarction cause for troponin elevation? (Examples: heart failure, aortic stenosis, end stage renal disease, etc.)
   The more plausible the alternative cause for troponin elevation, the less likely any immediate further diagnostic workup for myocardial infarction is justified and/or necessary.
3. Is any further evaluation urgently indicated? (Examples: delta troponin, echo, cardiac stress testing, cardiology consultation, etc.)

What are causes of troponin elevation that are not acute coronary syndromes?
Examples include but are not limited to: end stage renal disease, heart failure, tachyarrhythmias, pulmonary embolism, pulmonary hypertension, myocardial inflammation, sepsis, oxygen supply/demand mismatch, and critical illness.

What is the name of the assay we are using?
Our assay is high sensitivity cardiac troponin I, performed on a Beckman Coulter platform.

How does troponin T compare to troponin I?
Overall, the assays perform similarly when compared to each other, applied to patients being evaluated to rule out myocardial infarction.
What is meant by "high sensitivity" troponin?
The descriptor "high sensitivity" is unrelated to the statistical terms sensitivity and specificity. The assay is able to detect troponin at much lower levels in the serum or plasma. It is a more precise test than the traditional troponin assay.

What are the units being reported?
Reporting is given in nanograms per liter rather than nanograms per milliliter. Thus, results are given in whole numbers, not fractions.

Are there any differences between males and females using this test?
Yes, there are different cutoffs for males and females at the 99th percentile. Males tend to have slightly higher values.

Is checking a second delta troponin always necessary?
No - see UC Health clinical guidelines for your location (ED, inpatient). If a patient has had constant chest pain for more than one hour, has HEART score < 4, undetectable troponin, and non-ischemic EKG, a provider can be confident that acute myocardial infarction has been excluded.

What is the recommended time interval for a delta troponin?
A repeat troponin value is recommended to be performed at least one hour after the first value. Use caution in interpreting the extremely early presentation, as it takes time for troponin to be detectable in the patient’s blood.

How do I compare high-sensitivity troponin values to the old troponin values and those from other hospitals?
Troponin values cannot be directly compared across assays. In the vast majority of cases, a troponin that was positive under the old assay will be positive under the new assay. Different health systems are using different assays. Thus, not all troponin results across systems are the same.

How were the cutoff values determined?
The cutoff values were determined by the Department of Laboratory Medicine.

References:
The Task Force for the Diagnosis and Treatment of Non-ST-Segment Elevation Acute Coronary