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# Implementation of a High-Sensitivity Troponin Assay for the Diagnosis of Acute Coronary Syndrome at Lehigh Valley Hospital – Cedar Crest

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## Background

- Troponins are a marker of cardiac damage and can be used to aid in the diagnosis of acute coronary syndrome.
- LVHN recently transitioned from a 4<sup>th</sup> generation troponin assay to a newer generation high-sensitivity troponin (hstroponin) assay.
- These new assays are more sensitive and accurate for the detection of acute myocardial infarction and can detect normal population values well below the 99th percentile.

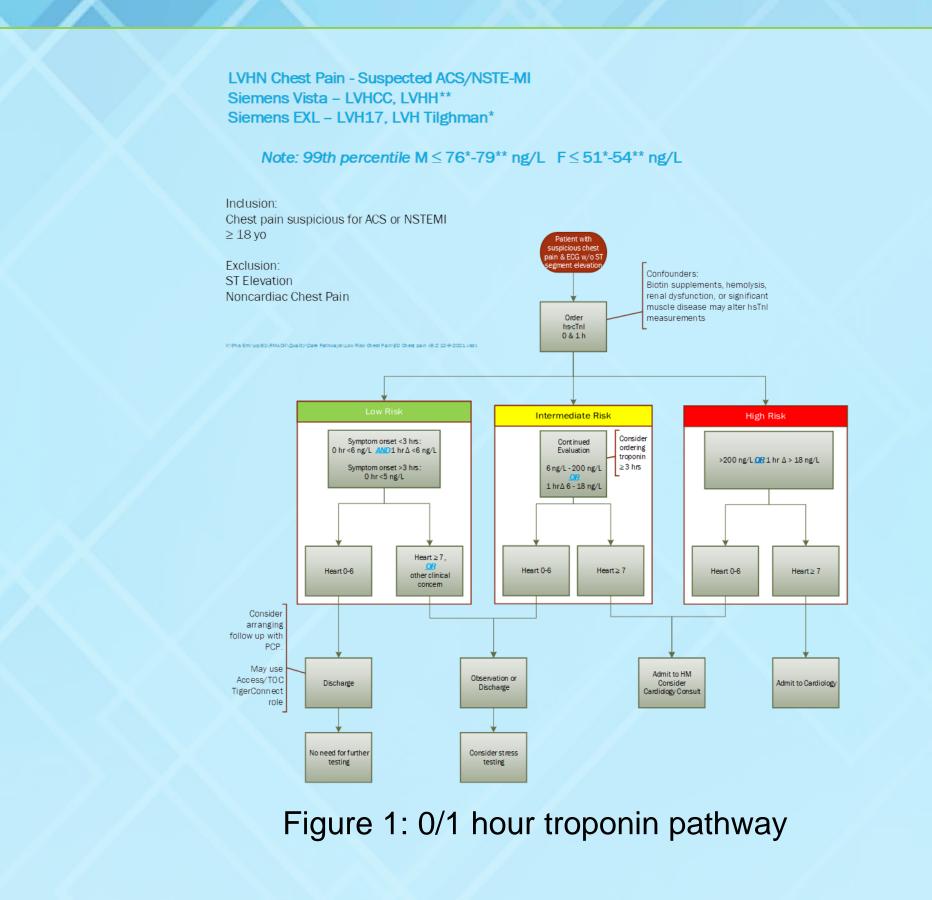
### Problem Statement

How do disposition and length of stay (LOS) for patients presenting with chest pain in the emergency department of LVH-CC change with the adoption of a new high sensitivity troponin assay compared to the standard troponin assay?

### Methods

- Data collected from two cohorts in two separate two-week intervals from 12/30/2020 to 1/13/2021 for the older troponin tests, as well as the two-week period from 12/30/2021 to 1/13/2022 for the newer hs-Troponin tests
- Patients were included if they had chest pain suspicious for Acute Coronary Syndrome (ACS) or NSTEMI and were ≥18 years old
- Patients were excluded if they were diagnosed with a STEMI or left without being seen
- Patients were then assessed for risk of ACS (low, intermediate or high) based on their troponin values
- For each cohort, ED length of stay was calculated for patients who were discharged.

## Results



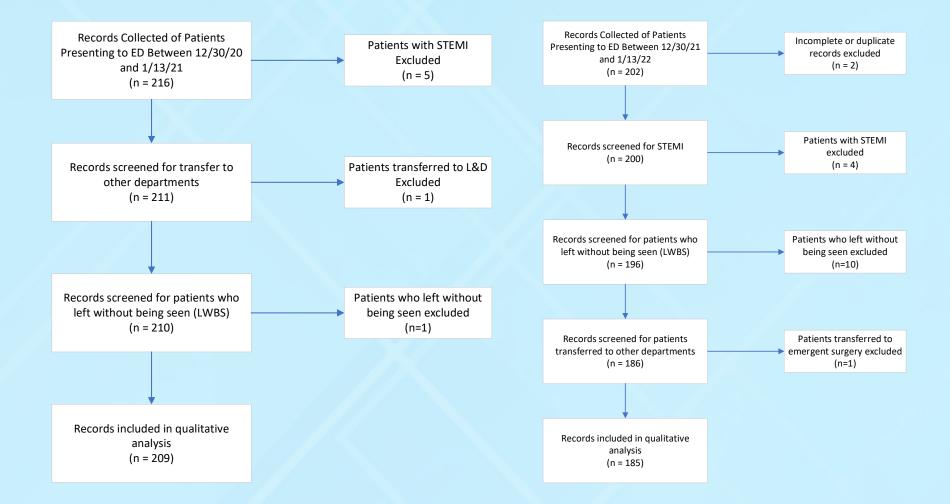


Figure 2: Records included for analysis

 For discharged patients, ED LOS was not significantly different between the two groups. Pre-hsTroponin average LOS was 3:01; Post-hsTroponin average LOS was 2:52 (p = 0.48, paired t-test).

	Pre- hsTroponin	Post- hsTroponin	Absolute % Difference
Discharge	55.6%	66.0%	+ 10.4%
Observe	19.6%	9.2%	- 10.4%
Admit	24.9%	24.9%	0%

- The proportion of admitted patients was unchanged; discharges increased 10.4% while the proportion of patients placed in observation also decreased by 10.4%.
- A chi-squared test for significance yielded p = 0.01, suggesting the newer hs-troponin test is linked to ED disposition.

### Discussion

- These results demonstrate the importance of shared decision making, as well as the need for providers to practice evidence-based medicine as new diagnostic tools become available.
- Among the two groups of patients who were discharged, there was no statistically significant difference in ED LOS. Several factors may decrease length of stay. Examples include the Rapid ED lab and more rooms at LVH-CC, especially when compared to the increased LOS seen at LVH-Hazelton.
- An increase in discharges driven by a decrease in observations suggests that the new troponin assay allows providers to rule out ACS in a greater proportion of patients.

## Conclusions

- Overall, our results suggest that the new troponin assays allow providers to appropriately discharge more patients than old troponin assays. The unchanged admission rates suggest that the new assays are just as effective in diagnosing ACS.
- Future directions for this work could include measuring compliance with the new 0/1 hr pathway and tracking MACE 30 incidence.

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