Evaluation of the high sensitivity troponin and HEART score in its effectiveness in reducing chest pain observation admissions

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Background

- Acute coronary syndrome (ACS): conditions associated with reduced blood flow to the heart muscles due to plaque often resulting in chest pain
- Evaluation requires history, physical exam, troponin values, and frequently a scoring system
- The standard troponin assay (STA) has largely been replaced with the high-sensitivity troponin (HST) in many hospitals
- High-STEACS trial indicated a HST <5ng/dL had a negative predictive value of 99.7% and there was NO significant improvement in NPV with addition of HEART, EDACS, TIMI, or GRACE scores.
- Our study evaluates the role of HST and the HEART score in chest pain observation admissions to rule out ACS.

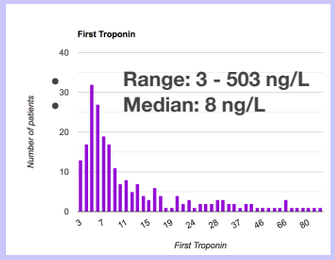
Methods

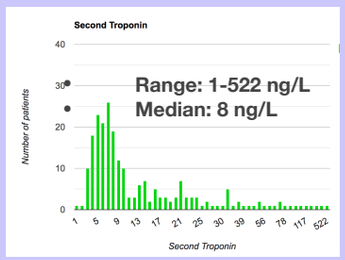
- Retrospective chart review of patients presenting to the ED with chest pain from August 2020 to January 2021 (STA) and April 2021 to September 2021 (HST)
- These dates represent periods before and after the initiation of the HST in our hospital system
- Included: adults that presented to the emergency department with the chief complaint of chest pain
- Evaluated number of admissions for chest pain observation before and after the introduction of the HST
- We recorded their first and second troponin, delta troponin, length of stay, HEART score, diagnosis of ACS, and mortality
- Evaluated the algorithm used in our hospital to determine if proper protocol is being followed

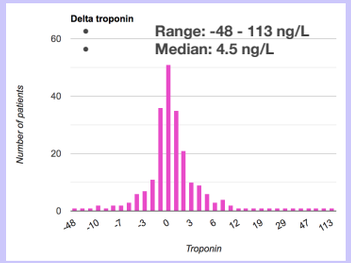
Results

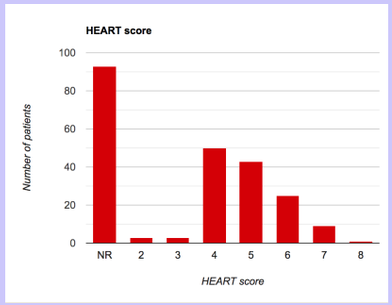
N = 227
Age Range: 21-104 years; Median: 62.5 years

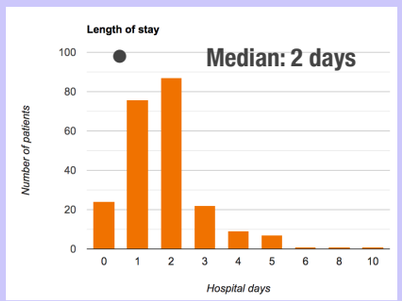
STA: 180/913 (19/7%); HST: 275/1567 (17.5%)
NO significant reduction (p = 0.169)

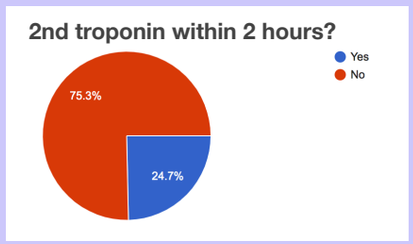


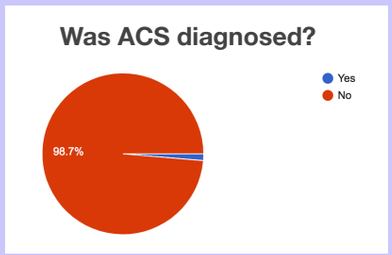






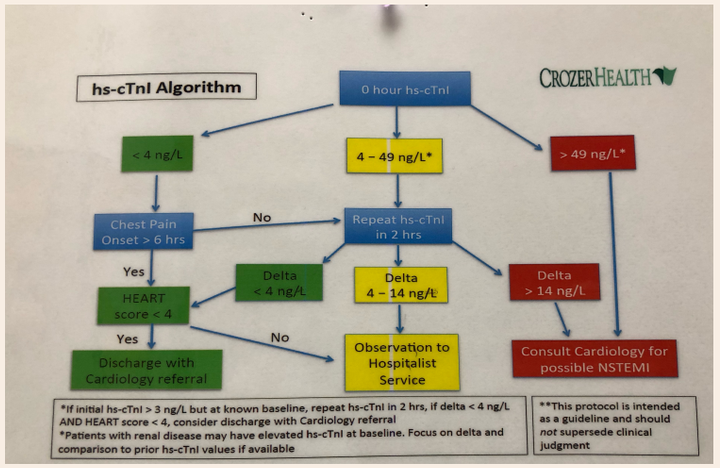






85% of patients that were admitted under chest pain observation had a delta troponin of 4 ng/L or less

Hospital Algorithm



Conclusion

- Percentage of pts admitted to obs did decrease to 17.5% from 19.7% but not statistically significant
- More than 75% of the time, the troponin is inappropriately calculated
- 41% of the time HEART scores were not recorded

Next Steps

- Introduce a second more objective testing as an alternative to the HEART score
- Ensure troponin is collected within the proper time frame prior to decision to admit vs discharge
- Use high-sensitivity troponin and delta troponin as the sole indication for admission to observation