



Novel 1 Hour Troponin Algorithm in Risk Stratification of Patients Presenting with Chest Pain to the Strong Memorial Hospital ED



Kimberly Hsu, M.D., Andrew Mathias, M.D.
University of Rochester Medical Center, Rochester, NY

Background:

- Hospital utilization is at an all time high and there is a need to streamline processes and expedite patient disposition.
- Previously Tr0hr and Tr3hr were used to risk stratify patients of suspected acute coronary syndrome (ACS).
- Tr0hr and Tr1hr have shown to accurately identify ACS.
- Does a new algorithm utilizing Tr0hr and Tr1hr to risk stratify patients presenting with chest pain expedite patient disposition?

Methods:

- The study population was identified by ICD10 codes for chest pain on arrival to the ED, with "complete troponins" with at least two time points, either troponins at 0 and 3 hours (Tr0hr and Tr3hr), or 0 and 1 hour (Tr0hr and Tr1hr).
- ED and hospital house staff were trained with the new algorithm before it was made available starting February 2022.
- Data from July 2021 to January 2022 were Pre intervention, utilizing Tr0hr, Tr3hr to risk stratify patients.
- Data from February 2022 to August 2022 were Post intervention, utilizing Tr0hr and Tr1hr. Risk stratification in clinical practice included Tr3hr as indicated, but for the purpose of assessing how the new and old algorithm compare with regards to changes in length of stay (LOS), risk stratification for Post only considered Tr0hr and Tr1hr.



Figure 1. New Algorithm - Initial Tr0hr, Tr1hr Risk Stratification

Figure 2. New Algorithm - Subsequent Tr3hr Pathway for Risk Stratification

Results:

- From July 2021 to January 2022, there were 2301 ED presentations of chest pain, 34% of which had complete troponins.
- From February 2022 to August 2022, there were 2085 ED presentations of chest pain, 43% of which had complete troponins.
- The new algorithm showed varied changes in LOS that are not statistically significant, though it demonstrated trends of decreased number of patients requiring Tr3hr draw.

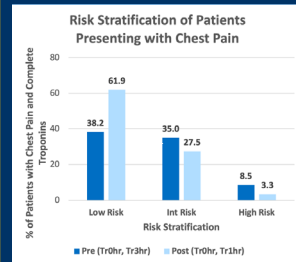


Figure 3. Risk Stratification of Patients Presenting with Chest Pain

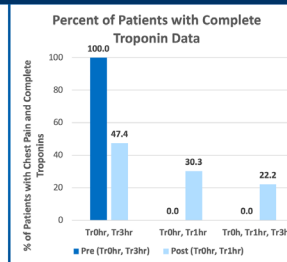


Figure 4. Distribution of Troponins

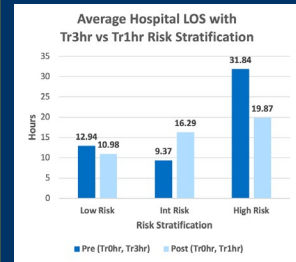
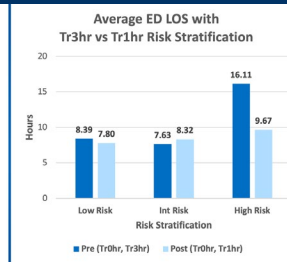


Figure 5 and 6. Average Hospital LOS and Average ED LOS by Risk Stratification using Pre (Tr0hr, Tr3hr) vs Post (Tr0hr, Tr1hr)



Value Proposition:

- This project is beneficial to both patients and providers in an effort to expedite patient disposition, decrease length of stay, and subsequently decrease hospital resource utilization and cost burden to hospitals and society.

Conclusions:

- The adoption of Tr0hr and Tr1hr for risk stratification of patients for suspected ACS has the potential to risk stratify patients sooner and decrease patient length of stay.
- This study is an important step in an institution wide protocol change to decrease hospital resource utilization.
- The results of the study are limited by the short timeframe considered with the recent algorithm change and the absence of a "blanking period" as clinical practice patterns adjust to the new algorithm. Additionally, it was restricted to ED presentations and excluded inpatient presentations of chest pain.

Reference:

- Chew, D., Lambakis, K., Blyth, A., et al. A Randomized Trial of a 1 Hour Troponin T protocol in Suspected Acute Coronary Syndromes. Circulation. 2019;140:1543-1556.

Acknowledgements:

- Rich Mays, Programmer.

Disclosures:

- No disclosures.