

**“Frequency, compliance, and yield of cardiac testing after high-sensitivity troponin accelerated diagnostic protocol implementation”**

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# Introdcution

In the United States , nearly 6 million persons annually present to emergency departments with a chief complaint of chest pain, representing about 4% of all visits .

The variation in acute coronary syndrome (ACS) presentations create a challenging task for emergency clinicians to manage these persons when they present to the ED since only approximately 5% of them will have a final diagnosis of acute coronary syndrome

As a result, much over-testing occurs for the relatively small number of cases that actually have acute coronary syndrome while on the other hand, owing to its high risk, missed myocardial infarction continues to be one of the most common reasons behind malpractice lawsuits filed against emergency medicine clinicians

# Methods

- It is a retrospective observational cohort study at 5 EDs in a large integrated health system to describe the use of cardiac testing following the adoption of a new accelerated diagnostic protocols that includes high-sensitivity cardiac Troponin ( example of an ADP : **history/ECG/age/risk factors/troponin (HEART)** )
- Patient should be older than 18 years old , presenting suspected acute coronary syndrome at one of 5 different chosen EDs , between april 1 , 2017 and march 31 , 2019 . If patients had multiple visits for the same complaint , we choose one visit per unique presentation randomly . Patients with stage 4 or 5 kidney disease ( GFR < 30ml/min) were excluded .
- **The primary outcome** of this analysis **was the rate of cardiac stress testing or CCTA** (Coronary computed tomography angiography) following patient visits for suspected ACS between the pre and post high-sensitivity cTn as expressed by the number of tests per 100 patient visits . Two secondary outcomes were the compliance of these test with the the new ADPs including hs cTn and diagnostic yield (**ratio of positive tests to total tests** ) among those who had testings .

**PS : a low risk person , identified by the old ADP ,receiving further testing is considered as non compliant . In the post hs cTn period , we used a combination of delta hs cTn values combined with risk category to define compliance .**

# Results

- There were **7564 patient-visits for chest pain**, including 3665 in the pre- and 3899 in the post-period
- Following the updated ADP using hs-cTn, **862 (23.5 per 100 patient visits) visits led to subsequent testing versus 1085 (27.8 per 100 patient visits) in the pre-hs-cTn period**
- Among those who had further testing , the ADP featuring old cTn classified 207 of patients as low risk and the ADP featuring hs cTn classified 461 **which leads to the falling of compliance rate of these protocols from from 80.9% to 46.5% .**
- However , the **yield of tests (Stress test and CCTA ) rose from 24.5% to 29,2%**

# Discussion

- In this study across 5 EDs in a large integrated health system, in the year after the implementation of hs-cTn, individuals presenting to the ED with suspected ACS **were less likely to receive cardiac testing compared to the prior year when older generation cTn tests were used.**
- Nonetheless , clinicians were less likely to adhere to diagnostic recommendation not to test based on the updated ADP , driven by testing among intermediate risk HEART score patients with reassuring hs-cTn results
- On the other hand , **testing among persons with a low risk HEART score fell dramatically demonstrating that the overall reduction in testing largely likely came from this group**

# Conclusion

- To conclude , there is a huge correlation between adopting hs cTn to new ADP protocols and the reduction of patient that got tested presented at the ED with suspected acute coronary syndrome .
- Among those who were tested the protocol compliance fell , yet the rise of the yield rate of these tests is not significant
- However , with tools providing increased sensitivity to detect risk , the ability to categorize individuals as low-risk allows for reduction in unwarranted variations in clinical practice and to focus on the higher risk patients instead