

## High Sensitivity Troponin Frequently Asked Questions

### *Which Troponin order should be selected?*

The troponin order panel contains options for a single troponin, a 0- and 1-hour troponin, and a 0-, 1-, and 3-hour troponin. Patients who are getting troponin testing for non-ACS conditions (e.g. myocarditis, PE, etc.) should be ordered for a single troponin if ACS is not suspected. Patients being evaluated for ACS that are low to moderate risk should get a 0- and 1-hour troponin ordered. Based on the results the provider can subsequently order a scheduled 3-hour troponin. If a patient is low risk and symptoms have been >3 hours, a single high sensitivity troponin may be appropriate. Patients who are high risk or will likely fall in the grey-zone pathway should get a 0-, 1-, and 3-hour troponin ordered. If a patient is ruled out based on the pathway and additional troponins were scheduled, please ensure they are canceled prior to collection.

**Serum Labs**

- ☐ CBC+Platelet+Differential
- ☐ Basic Metabolic Panel (aka BMP)
- ☐ Type And Screen
- ☒ **HS - Troponin Panel**
- ☐ Lipase
- ☐ Lactate-Bld
- ☐ HCG Total, Quant
- ☐ Fibrin Degrad-Dimer
- ☐ PT and APTT
- ☐ Brain Natriuretic Peptide
- ☐ Hepatic Function Panel
- ☐ Alcohol (Quant) Serum

**HS - Troponin Panel**

[Please find the ACS diagnostic pathway here.](#)

☐ HS-Troponin I  
ONCE, Starting 11/3/22

☐ High Sensitivity Troponin (Now & in 1 Hour) w/ Telemetry

☒ High Sensitivity Troponin (Now & in 1 Hour and in 3 Hours) w/ Telemetry

☒ HS-Troponin I  
STAT, ONCE, today at 0946, For 1 occurrence  
Release to MyMountSinai (MyChart)? Auto-release

☒ HS-Troponin I  
STAT, ONCE, today at 1046, For 1 occurrence  
Release to MyMountSinai (MyChart)? Auto-release

☒ HS-Troponin I  
STAT, ONCE, today at 1246, For 1 occurrence  
Release to MyMountSinai (MyChart)? Auto-release

☐ Telemetry Monitoring within the ED  
STAT

### *Which patients should be placed on a Cardiac Monitor or Telemetry Monitoring during an ACS work up?*

Patients who are at moderate to high risk for ACS should be placed on cardiac or telemetry monitoring while being evaluated for ACS until it has been ruled out using the accelerated diagnostic pathway. Patients who rule in should be maintained on telemetry monitoring. Patients with a history of PCI or CABG within the last year, history of abnormal stress/cath within the last year, new regional ischemic EKG changes, frequent PVCs, new bundle branch block, and/or concerning signs or symptoms (Typical chest pain or anginal equivalent presentation) are especially high risk and should always be on a monitor. These patients should not have routine imaging ordered until their ACS work up is complete. Additionally, if patients must be transported, they should be maintained on a monitor and be accompanied by clinical staff.

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*Is a Troponin above the cutoff value in the result section considered positive?*

The cutoff values shown in the result represent the sex-specific 99<sup>th</sup> percentile. There are no longer positive or negative values, but instead values should be trended and used with the HEAR(T) score to appropriately risk stratify and disposition the patient.



An understanding of these terms facilitates transition to high-sensitivity cardiac troponin testing. %tile = percentile; cTn = cardiac troponin; CV = coefficient of variation; LoB = limit of blank; LoD = limit of detection; LoQ = limit of quantitation; Std. Dev. = standard deviation.

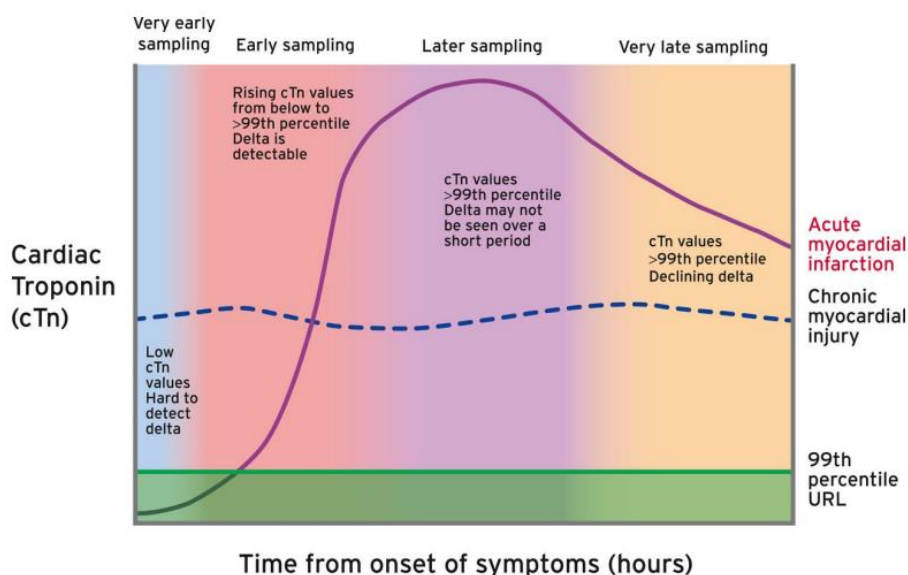
*How do you apply sex-based cutoffs to patients who are transgender or non-binary? How do you apply sex-based cutoffs to patients who are unable to be identified and are registered as unknown or who prefer not to disclose their sex?*

These patients should be evaluated using the lower cutoffs that are shown in the Accelerated Diagnostic Pathway. This is because limited data exist in the use of sex-based cutoffs for these populations and using the lower cutoffs will maintain sufficient sensitivity in order to avoid inappropriately discharging patients who could have an acute coronary syndrome.

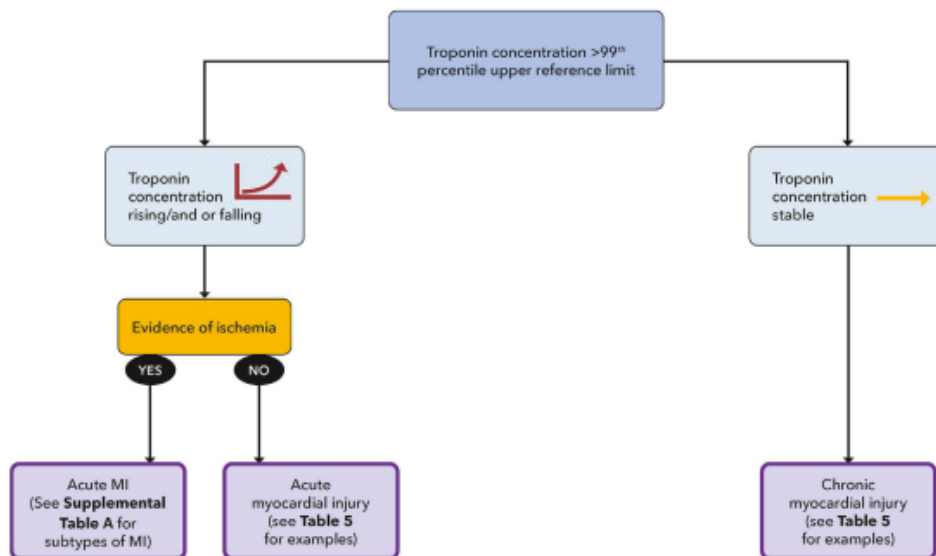
*How do we manage patients with a Troponin elevation who clinically do not have symptoms concerning for ACS?*

Patients with rising or falling troponins that do not have signs of symptoms of active ischemia (e.g., chest pain, EKG changes, new wall motion abnormalities) are likely suffering from acute myocardial injury. Differentiating between myocardial injury and Type 2 MI will require clinical judgement and when the diagnosis is unclear should involve a Cardiology consult for definitive management recommendations.

## High Sensitivity Troponin Frequently Asked Questions



Kristian Thygesen et al. JACC 2018;j.jacc.2018.08.1038



Kontos M, de Lemos J, et al. 2022 ACC Expert Consensus Decision Pathway on the Evaluation and Disposition of Acute Chest Pain in the Emergency Department. J Am Coll Cardiol. 2022 Nov, 80 (20) 1925–1960. <https://doi.org/10.1016/j.jacc.2022.08.750>

*Can we compare high-sensitivity Troponins to previous Troponin values?*

There is no way to compare high-sensitivity Troponin values to non-high sensitivity Troponin values and converting units is not an appropriate method of comparing trends.

## High Sensitivity Troponin Frequently Asked Questions

### How do you calculate a delta Troponin?

The 1 hour delta should be calculated by subtracting the 0 hour troponin from the 1 hour troponin. The 3 hour delta should be calculated by subtracting the 0 hour troponin from the 3 hour troponin. The delta values shown in the pathway are an absolute value and therefore large positive or negative deltas are concerning for active myocardial ischemia.

### How do you incorporate the Troponin result into the HEAR(T) Score?

When calculating a HEAR(T) score, the Troponin is no longer included. This means the maximum score is 8 and only incorporates points for History, EKG, Age, and Risk Factors.

History	<b>Slightly suspicious</b>	<b>0</b>
	Moderately suspicious	+1
	Highly suspicious	+2
EKG 1 point: No ST deviation but LBBB, LVH, repolarization changes (e.g. digoxin); 2 points: ST deviation not due to LBBB, LVH, or digoxin	<b>Normal</b>	<b>0</b>
	Non-specific repolarization disturbance	+1
	Significant ST deviation	+2
Age	<b>&lt;45</b>	<b>0</b>
	45-64	+1
	≥65	+2
Risk factors Risk factors: HTN, hypercholesterolemia, DM, obesity (BMI >30 kg/m <sup>2</sup> ), smoking (current, or smoking cessation ≤3 mo), positive family history (parent or sibling with CVD before age 65); atherosclerotic disease: prior MI, PCI/CABG, CVA/TIA, or peripheral arterial disease	<b>No known risk factors</b>	<b>0</b>
	1-2 risk factors	+1
	≥3 risk factors or history of atherosclerotic disease	+2

## High Sensitivity Troponin Frequently Asked Questions

*Why does my patient have a banner alert for HEAR(T) Score documentation?*

Patients who present to the ED with symptoms concerning for ACS who have a Troponin ordered will trigger a banner alert recommending HEAR(T) Score documentation as shown below. If the provider believes this alert is incorrect, they can simply select “No, patient does not meet HEAR(T) Score criteria” to make the alert disappear. If the alert is correct, the provider should click the alternative option and complete the documentation as shown.

**Note Needed.**

This patient needs HEART score documentation. Please open a progress note and record a HEART score (or opt out). Click here for more info.

**Progress Notes**

**Progress Notes**

> ED-Medical ICU Handoff

> Admission Handoff Documentation

> HEAR(T) Score Documentation

On my clinical evaluation the patient's presentation did not meet criteria for application of the HEART Score.

☐ No, Patient does not meet HEART Score criteria, ☐ Yes, Patient does meet HEART Score criteria.

Chest Pain Evaluation Pathway

> CHF Heart Failure Pathway

> Sepsis Screening & Evaluation

**HEAR(T) Score Documentation**

On my clinical evaluation the patient's presentation did not meet criteria for application of the HEART Score.

☐ No, Patient does not meet HEART Score criteria, ☒ Yes, Patient does meet HEART Score criteria.

Chest Pain Evaluation Pathway

History ☒ Slightly Suspicious ☐ Moderately Suspicious ☐ Highly Suspicious

EKG ☐ < 45 ☒ 45 - 64 ☐ > 65

Risk Factors (HTN, HLD, DM, Obesity BMI > 30 KG/m2, smoking, positive family history such a parent or sibling with CVD before age 65.

☒ No Known risk factors ☐ 1-2 risk factors ☐ > = 3 risk factors or history of atherosclerotic disease (prior MI, PCI/CABG, CVA/TIA or PAD)

ED Visit Troponin Values Results autopopulate into note via smartlink.

The patient's HEAR(T) Score as calculated above is 4

The patient was evaluated for an acute coronary syndrome using the Mount Sinai Health System accelerated diagnostic pathway with high-sensitivity troponin(s). Based on the pathway and other relevant clinical factors, the patient will be admitted to a floor telemetry unit.

**Progress Notes**

**Acute Coronary Syndrome Clinical Evaluation**

On my clinical evaluation the patient's presentation did not meet criteria for application of the HEART Score. **Yes, Patient does meet HEART Score criteria.**

History: Slightly Suspicious

EKG: 45 - 64

Risk Factors (HTN, HLD, DM, Obesity BMI > 30 KG/m2, smoking, positive family history such a parent or sibling with CVD before age 65. **No Known risk factors**

ED Visit Troponin Values:  
**No results found for: HSTROPI**  
**No results found for: TROPI**

The patient's HEAR(T) Score as calculated above is: 4

The patient was evaluated for an acute coronary syndrome using the Mount Sinai Health System accelerated diagnostic pathway with high-sensitivity troponin(s). Based on the pathway and other relevant clinical factors, the patient will be admitted to a floor telemetry unit.

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*How do we arrange 72 hour follow up for patients who are evaluated for ACS and are recommended for this based on their results and the accelerated diagnostic pathway?*

Please refer to the separate 72-hour follow-up guide for arranging follow-up at your respective institution. This should be used for patients who do not have a cardiologist and are unable to independently arrange follow-up. Patients who have a primary cardiologist should attempt to contact their cardiologist and ensure they can be appropriately followed up. Patients who cannot be scheduled by the clinic over the phone should be considered for a same day work up in the hospital. Alternatively, the social work and care management team can be engaged to help with complex follow-up cases.