

## **Modified ED Chest Pain Observation Criteria**

### **Objectives:**

- Develop an evidence-based approach to the evaluation of chest pain patients in the Emergency Department.
- Clearly delineate roles and responsibilities of services in the placement of patients in the Cardiac Observation Unit and their subsequent diagnostic assessment and medical care.
- Improve real-time communication between the Cardiology Service and the Emergency Department for patients being evaluated for potential cardiac chest pain etiologies prior to their placement in Cardiac Observation Unit and during their course of diagnostic evaluation and care.
- Reduce unnecessary admissions to the Observation unit

### **Chest Pain Rule-outs:**

- 1) **Low Risk Patients-** our goal is to clearly define low risk patients who can safely be discharged from the Emergency Department without further immediate testing. These low risk patients can safely have outpatient risk-stratification studies performed if indicated.
  - We propose to use the HEART (History, ECG, Age, Risk factors, Troponin) Score<sup>1,2</sup> with 0-hour and 3-hour Troponins for determining low risk patients for all CP Rule-out patients (see scoring system below). **Those patients with HEART Scores of 0-3 and negative Troponins will be considered Low Risk.** If patients meet the Low Risk definition, they will NOT REQUIRE Cardiology consultation or placement in our Cardiac Observation Unit. Their evaluation and care will be the responsibility of the Emergency Department, including ordering an appropriate outpatient study if indicated.
  - The following studies can be considered for outpatient risk stratification if another etiology for symptoms is not found:
    - 1) **Regular Exercise Treadmill Test-** appropriate for MEN with regular rhythm on ECG with normal ST Segments and who are able to walk
    - 2) **Exercise Echocardiogram-** appropriate for WOMEN and MEN with abnormal ECGs

- 3) **Dobutamine Echocardiogram-** appropriate for all patients with the inability to exercise/walk
- 4) **Nuclear Studies-** reserved for studies of patients with LBBB, known multi-vessel disease, or when there are no additional studies available through the Heart Station.

*\*The Heart Station will measure follow-up success rates with reasons for fall-outs to the 72 hour AHA recommendation for “Urgent” ad hoc ETT and Stress Echo requests placed for ED patients. Cardiology and Emergency Medicine will evaluate our practice in an ongoing fashion.*

- 2) **Moderate/High Risk Patients-** our goal is to clearly define those patients not considered “Low Risk” based on their HEART Scores, with negative 3-hour delta Troponins, and **non-diagnostic** EKGs who need further cardiac work-up. These patients may still be safely placed in the Cardiac Observation Unit but have both a higher likelihood of underlying disease and need for further testing and evaluation. These patients will be divided into 2 groups, those with known disease and those without known disease:

**A. HEART Risk Score  $\geq$  4, negative initial Troponin, AND without known CAD or recent cardiac study (catheterization within 2 years or nuclear study/stress echo within 1 year)**

- At the discretion of the Emergency Department attending, these patients can be placed in the Cardiac Observation Unit under the care of the Emergency Department. The ER will order the appropriate cardiac studies based on the following recommendations by the Cardiology Department:

- 1) **Exercise Echocardiogram-** for both men and women who can exercise
- 2) **Dobutamine Echocardiogram-** for all non-exercisers/walkers
- 3) **Nuclear Studies-** reserved for patients with LBBB, known multi-vessel CAD, and when additional studies are unavailable through the Heart Station

- Cardiology DOES NOT NEED to be consulted on these patients unless questions arise about patient management or for abnormal results from cardiac testing (see below).

-Cardiology has created a ‘Preliminary Report’ for PowerChart which will be available for viewing immediately upon completion of studies. Results of abnormal cardiac studies will be communicated directly to the ER physician in charge of the patient.

-In the event of normal studies, the ER will be responsible for discharging patients with appropriate follow-up with Primary Care Physicians.

-In the event of abnormal cardiac studies, Cardiology will perform consults with appropriate plans for patient disposition and care. Cardiology will ensure that these consults will be performed in an expedited fashion that same day.

-Cardiology will also provide guidance on the numbers of cardiac studies available for the Cardiac Observation Unit throughout the entire week (see below).

**B. HEART Risk Score  $\geq$  4, negative initial Troponin, AND history of CAD and/or recent abnormal cardiac study**

-A real-time discussion between the ER Resident or Attending and the Cardiology Fellow is recommended. The patient's presentation, HEART Risk Score, history, and ECG will be reviewed, and a decision for placement in Cardiac Observation Unit will be made. If the patient is placed in Obs, the decision for which cardiac study will be discussed, and the ED will be responsible for ordering the appropriate study.

-If the communication between the ER resident and Cardiology Fellow does not result in a mutually acceptable plan, the ER attending and the Cardiology attending will resolve concerns.

-If Cardiology recommends serial troponins and telemetry only (maximum 12 hour observation) in the Cardiac Observation Unit but NO additional study, the Cardiology consultant will staff the patient with the attending and leave recommendations in the Electronic Medical Record (EMR) with the discharge plan and follow-up recommendations PRIOR to the patient's discharge from Obs.

-For all other patients, the Cardiology team will complete their official Consult with management and disposition recommendations available in the EMR and communicate directly to the ER Attending in charge.

**3) Availability of Cardiac Studies for Patients placed in Cardiac Observation Unit**

A. *Weekday (M-F) Tests Available-* Exercise Treadmill (3), Exercise or Dobutamine Stress Echocardiogram (2), Nuclear Studies (2)

- B. *Weekend Tests Available per day-* Exercise Treadmill (2), Exercise or Exercise Stress Echocardiogram (1)
1. Communication with Cardiology Fellow will need to occur PRIOR to ordering any weekend studies
  2. No Nuclear Studies are currently available on weekends
  3. If any additional studies are needed on patients being considered for Cardiac Observation with HEART Scores > 4, a real-time discussion with the Cardiology Fellow as well as official Cardiology Consult for triage decisions is appropriate.
- C. *Blood Pressure Control-* because patients increase their Blood Pressure 20-40% during stress testing, adequate blood pressure control needs to be instituted prior to completing any cardiac stress test. This is the responsibility of the Emergency Department and should be included in Chest Pain Observation orders.

#### 4) **Guidelines for Ordering Cardiac Stress Tests**

- A. **Regular Exercise Treadmill Test-** appropriate for MEN with regular rhythm on ECG with normal ST Segments
- B. **Exercise Echocardiogram-** appropriate for WOMEN and MEN with abnormal ECGs
- C. **Dobutamine Echocardiogram-** appropriate for all patients with the inability to exercise/walk
- D. **Nuclear Studies-** reserved for studies of patients with LBBB, known multi-vessel disease, or when there are no additional studies available through the Heart Station.

#### 5) **Absolute Contraindications for ED Chest Pain Observation**

- A. **Patients with Positive Troponins-** patients with indeterminate (and possibly Type II leaks) need to be discussed between services PRIOR to placement in Obs.
- B. **Uncontrolled Severe Hypertension**
- C. **Acute Decompensated CHF**
- D. **Unstable Angina-** if ED attending unsure or undecided about Unstable Angina, a discussion with Cardiology Fellow or Attending needs to occur in real-time for a definitive plan of action. Those with Unstable Angina **should** to receive ASA, anticoagulation, and be admitted to the Cardiology In-patient Service.
- E. **Moderate Risk patient (HEART Score  $\geq$  4) with normal *non-treadmill* stress test within the last year or normal cardiac catheterization within last 24 months-** these patients may have an ACS rule out with serial troponins and be considered for discharge with outpatient follow-up. Discuss with cardiology as warranted.

**Table 1. The HEART Score**

	<b>Points</b>
<b>History</b>	
Highly suspicious	2
Moderately suspicious	1
Slightly suspicious	0
<b>ECG</b>	
Significant ST-depression	2
Nonspecific repolarization abnormality	1
Normal	0
<b>Age</b>	
≥ 65	2
45-65	1
≤ 45	0
<b>Risk factors</b>	
3 or more risk factors	2
1-2 risk factors	1
No risk factors	0
<b>Troponin</b>	
≥3 X normal limit	2
1-3 X normal limit	1
≤ Normal limit	0
<b>Total</b>	

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Low risk= 0-3, high risk ≥4.

Risk factors include currently treated diabetes mellitus, current or recent (<90 days) Smoker, diagnosed and/or treated hypertension, diagnosed hypercholesterolemia, Family history of coronary artery disease, obesity (BMI >30), or a history of Significant atherosclerosis (coronary revascularization, myocardial infarction, Stroke, or peripheral arterial disease).

**References:**

- <sup>1</sup> Mahler, Hiestand et al. Can the HEART Score Safely Reduce Stress Testing and Cardiac Imaging in Patients at Low Risk for Major Adverse Cardiac Events. *Critical Pathways in Cardiology*, Vol 10 (3)
- <sup>2</sup> Mahler, Mill et al. Identifying patients for early discharge: Performance of decision rules among patients with acute chest pain. *International Journal of Cardiology*; Oct 29 2012.