

## **Workup of Chest Pain Patients Presenting to the Emergency Department and Testing of CEU Chest Pain patients**

### **Summary:**

- **Low risk CP Patients** who are (1) chest pain free, (2) non-acute EKG, (3) negative 6 hour troponin from the ONSET of pain OR (4) an initial troponin of  $\leq 0.04$  and 2 hour delta troponin less than 0.03 can be discharged from the ED with established 72 hour follow-up through Providence Providers Group, Western Washington Medical Group, or Everett Clinic Cardiology.
- **Patients with CP less than 6 hours**, a single negative troponin and non-acute EKG will be admitted to the CEU/Observation Unit
- **Unstable angina** or concern for ischemia on EKG will be admitted to cardiac telemetry after an initial troponin. If the initial troponin is negative, patient will be admitted to the hospitalist service and will need exercise versus pharmacological stress testing within 72 hours. If the initial troponin is greater than 0.5, (NSTEMI) the patient will be admitted to the cardiology service, per the existing service agreement.

### **Clinical Background:**

Chest pain is a common presentation to the emergency department and acute coronary syndrome cannot usually be ruled-out in the ED. It is also a highly litigious chief complaint and there is a low acceptable miss-rate for myocardial infarction. The number needed to treat (NNT) with admission is very high (approximately 5000) for low-risk chest pain patients, resulting in high levels of intervention and radiation exposure. Based on numerous studies, there is a reasonable and effective approach to outpatient risk stratification in a segment of the population presenting to the ED with low-risk chest pain. We are at a fairly low risk of missing patients with this approach. For the purposes of this guideline, "chest pain" is used to also indicate anginal equivalents, such as shortness of breath.

#### Definitions:

1. **Classic anginal chest pain:** This is chest pain that is usually exertional in nature and lasts more than 15-20 minutes. Chest pain lasting less than 60 seconds with normal EKG and troponin, and no associated syncope, is unlikely cardiac. Bedside assessment and history is critical in determining anginal chest pain from non-anginal chest pain.
2. **Unstable angina:** Also known as crescendo angina, this is angina at rest, usually longer than 15-20 minutes in duration. Unstable angina is new in onset, usually within the last 4-6 weeks, and limits physical activity. When a patient with stable angina develops increasing frequency,

duration, or intensity with minimal provocation, this is likely crescendo angina.

3. Low Risk Chest Pain: The following factors are considered criteria for low-risk chest pain: 1. No ischemic changes on EKG; 2. Systolic blood pressure >100 mmHg; 3. No signs of heart failure; and 4. Pain that is consistent with baseline angina. These combined with a negative 6-hour troponin, or negative a 2-hour delta troponin < 0.03, in a patient who is chest-pain free.

### **Management/Action:**

- Classic anginal chest pain: CEU/observation admission if meet the following criteria:
  - Currently chest pain free
  - Pain within the last 6 hours
  - Hemodynamically stable
  - Normal/unchanged EKG
  - Negative initial I-stat troponin
- Unstable angina: Cardiac telemetry admission to hospitalist if meet the following criteria:
  - Negative initial I-stat troponin
  - Hemodynamically stable
  - No ischemic changes on EKG
- Non-ST Elevation MI (NSTEMI): If the patient has a positive troponin greater than 0.5 with ischemic changes on EKG, and/or ongoing chest pain, cardiology will admit the patient. All patients who are hemodynamically unstable will be admitted to the CCU with cardiology involved. The following measures should be initiated for all patients with above findings, unless otherwise contraindicated:
  - Aspirin 81mg x4 by mouth, if not given by EMS
  - Nitrates, if not contraindicated
  - Beta blockers in the first 24 hours – start in the ED if tachycardic and/or hypertensive and no contraindications
  - Heparin
- Recent intervention: All patients with recent stent, angioplasty, or coronary artery bypass graft (CABG) – consider discussing with cardiology prior to admission.
- Low Risk Chest pain: Patients can be discharge from the ED with guaranteed (appointment made) cardiology follow-up in 72 hours.

- Patients presenting with chest pain occurring more than 6 hours prior to presentation, a normal EKG, normal troponin may be discharged with follow-up.
- Patients should not be discharged with nitroglycerin prescription.
- It is okay to recommend patient start Aspirin 81mg daily.

**Where chest pain patients are admitted:**

- **Chest Pain Evaluation Unit (CEU):** Low-risk chest pain patients who cannot be ruled out with a 6-hour troponin or 2-hour delta troponin with unchanged/normal EKG and negative initial troponin will be admitted to cardiology between 7am-3pm, and otherwise to the hospitalist.
- **Cardiac Telemetry:** All patients who do not meet criteria above.
- **Critical Care Unit:** Determined in consultation with the ED physician, CCU specialist and cardiologist. This admission is usually for the hemodynamically unstable patient.

**Risk Stratification of Chest Pain patients:**

- **Low Risk Chest Pain:**
  - If discharged from the Emergency Department, patients need to be seen within 72 hours by cardiology. Follow-up appointments are available on a real-time basis from the ED for Everett Clinic Cardiology, Providence Physicians Group Cardiology, and Western Washington Medical Group Cardiology.
  - If admitted to the CEU, patients should be risk stratified using the flowsheet criteria established in consensus by EC, PMG and WWMG cardiology. (See Attached)
- **Intermediate/High Risk Chest Pain:**
  - Per cardiology recommendations
- **Post-stent or Coronary Artery Bypass Grafting patients:**
  - Per cardiology recommendations
- **Recent cardiac stress testing (nuclear or treadmill)**
  - A normal stress test, with unchanged anginal symptoms, is unlikely to represent ACS. Should be discussed with the cardiologist if there is concern about the patient.
  - A normal stress test, with new, worsening anginal symptoms, is concerning and should be further evaluated.

## Citations

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