Chest Pain/STEMI Administrative Guideline

History	Signs and Symptoms	Differential
• Age • Medications (Viagra / sildenafil, • Levitra / vardenafil, Cialis / tadalafil) • Past medical history (MI, Angina, • Diabetes, post menopausal) • Recent physical exertion	• CP (pain, pressure, aching, vice-like • tightness) • Location (substernal, epigastric, arm, • jaw, neck, shoulder) • Radiation of pain • Pale, diaphoresis • Shortness of breath • Nausea, vomiting, dizziness • Time of onset	• Angina vs. Myocardial infarction • Pericarditis • Pulmonary embolism • Asthma / COPD • Pneumothorax • Aortic dissection or aneurysm • GE reflux • Chest wall injury or pain • Pleural pain

Nontraumatic chest pain or anginal equivalent

B	If dyspneic or hypoxemic administer oxygen and titrate to maintain SpO_2 of 94% May obtain 12 lead ECG for paramedic interpretation IV access (if authorized)
	Administer **aspirin 324 mg** PO (chewed) Administer **250 mL NS/LR fluid bolus** for SBP < 110 May repeat as needed
P	IV access Obtain 12 lead ECG and transmit, when available
	Administer **250 mL NS/LR fluid bolus** for SBP < 110 May repeat as needed Administer **ondansetron 4 mg** IV, as needed for nausea Consider **morphine 0.1 mg/kg** IV/IO **2-5 mg** increments every 5 minutes, to a max total dose 20 mg Hold for hypotension Consider **nitroglycerin 0.4 mg** SL tablets if SBP > 110 mm Hg May repeat every 5 minutes until pain relieved or to a max of 3 doses

Assess need for continuous cardiac monitoring

- Yes → ALS Transport
- No → BLS Transport

STEMI ALERT
(STEMI = 1 mm ST segment elevation in ≥ 2 contiguous limb leads or 2 mm elevation in precordial leads (v leads)

Obtain second IV

Transport patient to **Cardiac Receiving Center** or **Certified Chest Pain Center** with 24/7 cath lab capabilities

Patients without STEMI can be transported to the nearest receiving facility

Chest Pain patients who require cardiac monitoring

- Ongoing severe chest pain
- ECG computer description of ischemia, acute MI, or dyssrhythmia
- Patients receiving IVF or ALS medications*
- Paramedic discretion

**narcotic may not require ALS transport per agency policy*

Education /Pearls

Acute Coronary Syndrome (ACS) is a common cause of chest pain and occurs when the blood supply of the heart cannot meet demand, leading to ischemia or even infarct (permanent damage). Myocardial ischemia can present in a number of ways, including:

- **Chest pain or discomfort**: The most common symptom is chest pain or pressure, more frequently on the left side than the right.
- **Radiating Pain**: Pain can radiate to the neck, jaw, shoulder, arm, back, or stomach.
- **Shortness of breath**: Symptoms can be subjective or related to acute or exacerbating heart failure.
- **Other symptoms**: These symptoms include nausea, vomiting, sweating, fatigue, feeling lightheaded or dizzy, and a fast or irregular heartbeat.

Risk factors: Risk factors for ACS include age >45Y, diabetes, smoking, hypertension, hyperlipidemia, family history of cardiac disease, and atherosclerotic disease (prior stroke, heart attack, or peripheral vascular disease). The more of these risk factors a patient has, the more likely the cause of chest pain may be cardiac in nature.

- Consider ACS as the cause of chest pain in patients >45 y with multiple risk factors or in younger patients with recent cocaine/methamphetamine use.
- If presentation is severe or delayed, patients may present with acute heart failure, syncope and/or shock; consider fluid or pressors, as appropriate.
- Performance of serial ECGs is recommended if the first is not diagnostic and your suspicion for a cardiac event is high, or if you note a change in the patient's condition
- Consider transport by ALS when you anticipate clinical deterioration, consider administering ALS medications (e.g. ondansetron), observe arrhythmia, note hypotension, or suspect components of heart failure or other complication.

ST Elevation Myocardial Infarction (STEMI):

- Diagnostic criteria: Anginal symptoms plus one of the following:
  - 1 mm ST elevation in 2 or more contiguous limb leads (I, II, III, avF, aVR, aVL)
  - 2 mm ST elevation in 2 or more select precordial leads (V1-V6)
- Reciprocal changes on the ECG make myocardial infarction more likely, but is not required for diagnosis of MI.
- Treatment timing goals:
  - Obtain and transmit ECG within 5 minutes
  - Provide STEMI alert within 10 minutes
  - Time at scene less than 15 minutes

Aspirin: Apart from timely transport and recognition of ACS, aspirin is the only primary pre-hospital intervention in ACS that **improves survival.**

- Do not withhold aspirin while obtaining IV access.
- Patients <18 yo do not require aspirin; chest pain in this population is less likely cardiac in nature.

Morphine: Morphine provides analgesia but offers no survival benefit.

- Monitor for hypotension after administration.
- Opioids may be repeated per dosing guidelines.

Nitroglycerin: Nitroglycerin dilates vasculature and may ease pain caused by myocardial ischemia.

- The use of **nitroglycerine is contraindicated** within 24-48 hours of the use of erectile dysfunction medication (e.g. sildenafil, tadalafil).
- Remember when providing nitroglycerin to patients with inferior STEMI patterns (II, III, aVF), that this may represent a right-sided MI, that could lead the patient to be more dependent on preload. These adverse events can by managed, as long as you are prepared to administer fluids if hypotension occurs. Monitor closely for hypotension after administration..
- The use of nitroglycerin offers no survival benefit in chest pain.
- Nitroglycerin may be repeated per guidelines