COHESIVE HEALTHCARE MANAGEMENT & CONSULTING

Mangum Regional Medical Center

TITLE		POLICY
Management of Acute Chest Pain and Acute Coronary Syndromes		**EMD-014**
MANUAL	EFFECTIVE DATE	REVIEW DATE
Emergency Department	**02/2020**	
DEPARTMENT	REFERENCE	
Emergency Department		

I. SCOPE

This policy applies to Mangum Regional Medical Center and all medical staff, nursing staff, agency staff, and other persons performing work for or at the Hospital for the triage, assessment and initial management of patients presenting with chest pain and Non-ST-Elevation Acute Coronary Syndromes.

II. PURPOSE

Acute chest pain is one of the most common reasons patients seek treatment in the emergency department (ED). Chest pain accounts for 7.6 million ED visits annually in the United States. Serious and relative common causes of chest pain are due to acute coronary syndromes (ACS) that are the result of heart disease. Heart disease is currently the leading cause of death in the U.S. Annually 647,000 people die from heart disease accounting for 1 in every 4 deaths.

Chest pain associated with cardiac disease is often described as a vague discomfort that may not necessarily be identified as pain by the patient. Chest discomfort that may be related to ACS or another cardiac event may include but not be limited to one or more of the following:

- Pressure, fullness, burning or tightness in the chest
- Crushing or searing pain that radiates to the back, neck, jaw, shoulders, and one or both arms
- Pain that lasts more than a few minutes, gets worse with activity, goes away and comes back, or varies in intensity
- Shortness of breath
- Cold sweats
- Dizziness or weakness
- Nausea or vomiting
- Changes in vital signs (hypertension or hypotension, tachycardia, tachypnea, decreased oxygen saturation and cardiac rhythm abnormalities)

Women often present with atypical symptoms that may include but are not limited to:

- Shortness of breath
- Fatigue
- Lethargy
- Indigestion
- Back pain
- Anxiety prior to an acute MI

Risk factors for coronary artery disease (CAD) include both modifiable and non-modifiable risk factors. Non-modifiable risk factors include:

- Age: risk for developing CAD increases after the age of 35.
- Gender: men are at greater risk then women, but outcomes are worse for women.
- Ethnicity: African Americans, Hispanics, Latinos and Southeast Asians are at increased risk for CAD morbidity and mortality.
- Family history: a significant risk factor.

Modifiable risk factors have been shown to lead to significant reductions in CAD events and include:

- Hypertension: 1 out 3 patients have hypertension. Considered a major risk factor for CAD.
- Hyperlipidemia: second most common risk factor for CAD.
- Diabetes: more than 1 out of every 3 adults have prediabetes in the U.S., which puts one at risk of developing, diabetes, heart disease and stroke.
- Obesity: 69% of U.S. are either overweight or obese and at least 35% of U.S. adults are considered obese.
- Smoking: it is estimated that smoking causes approximately 800,000 deaths per year.
- Poor diet: recent studies have shown a correlation between trans-fat, soft drinks/sweetened beverages, red meat and processed meats correlate with an increased risk of cardiac events.
- Sedentary lifestyle: exercise has a protective effect against CAD and a lack a physical exercise increases the risk of CAD.

The purpose of this policy is to optimize the triage, assessment and management of patients presenting to Mangum Regional Medical Center emergency department by:

- Standardizing the care of patients who present with chest pain suggestive of a coronary event.
- To rapidly identify, stabilize and transfer patients presenting with a Non-ST Elevation Myocardial Infarction (NSTEMI) or ST-Elevation Myocardial Infarction (STEMI).
- Treat acute life-threatening complications of acute coronary syndromes including but not limited to ventricular fibrillation (VF), pulseless ventricular tachycardia (VT), unstable

tachycardias, symptomatic bradycardias, pulmonary edema, and cardiogenic shock utilizing the ACLS Acute Coronary Syndromes Algorithm (See Attachment A).

III. DEFINITIONS

A. **Acute Coronary Syndrome (ACS):** refers to a group of clinical symptoms associated with a sudden, reduced, blood flow to the heart. Includes unstable angina (UA), Non-ST-Elevation myocardial infarction (NSTEMI) and ST-Elevation myocardial infarction (STEMI).

B. **Stable Angina:** also known as "effort angina" refers to chest pain that occurs with some form of activity or with minimal or no symptoms at rest after the administration of sublingual nitroglycerin.

C. **Unstable Angina (UA):** refers to symptoms that are due to impaired blood flow within the coronary arteries that is inadequate to meet metabolic demands but does not result in actual cell death and without elevated cardiac troponin levels. The typical classifications include:

- Prolonged >20 minutes angina at rest
- New onset of severe angina
- Anginal symptoms occurring at rest or with minimal activity
- Symptoms occurring with increasing frequency (also known as crescendo angina), that require less exertion than previously to provoke, or more nitroglycerin to alleviate than before, longer in duration, lower in threshold, or that occurs after a recent episode of myocardial infarction.

D. **Non-ST-Elevation Myocardial Infarction (NSTEMI):** refers to symptoms that are characteristic of persistent elevation of cardiac troponin levels and myocardial cell death in the absence of diagnostic criteria for STEMI.

E. **ST-Elevation Myocardial Infarction (STEMI):** symptoms characteristic of cardiac ischemia due to complete occlusion of a coronary artery with persistent ST segment elevation (>1mm in two or more leads) or a new left bundle branch block (LBBB) on electrocardiography (ECG).

IV. POLICY

The approach to the management and treatment of patients presenting to the ED with complaints of chest pain is multidisciplinary. All patients who present to the ED with complaints of chest pain will be immediately triaged by nursing staff using the Emergency Severity Index (ESI) Algorithm (See Policy Attachment EMD-006A) to determine the severity of the patient's illness and assign a triage level. If the patient's chest pain is determined to be of cardiac origin an ECG will be obtained within 5 minutes of the patient's arrival. Nursing staff will immediately notify

the provider on-call of cardiac chest pain in the ED. ECG results will be provided to the provider upon arrival in the ED.

An initial comprehensive evaluation including interpretation of the ECG will be performed by the provider within 15 minutes of the patient's arrival in the ED. If a STEMI or NSTEMI is suspected emergency medical service (EMS) or Air Evac will be immediately notified by hospital staff for emergent transfer to a higher-level medical center.

V. PROCEDURE

A. Triage

1. All patients who present to the ED with complaints of chest pain will be **immediately** triaged using the ESI Algorithm and according to the Triage using the Emergency Severity Index Policy EMD-006.
    i. Patients presenting to the ED with complaints of chest pain or discomfort suggestive of ACS should be given a high priority at triage.
    ii. Nursing staff should determine date and time of onset of chest pain and document in patient's medical record.
    iii. The triage assessment and triage level must be documented in the appropriate area of the electronic medical record, including the date and time the assessment was completed.
2. Provider will be immediately notified of patient's arrival in the ED (if not in the ED).
3. An initial ECG will be obtained within 5 minutes of the patient's arrival during triage.
    i. The report will be provided to the provider and interpreted within 15 minutes of the patient's arrival.
    ii. If ECG show persistent ST elevation >1mm, new LBBB or ST depression hospital staff should immediately notify emergency medical services (EMS) or Air Evac of need for emergent transfer.
4. Nursing staff can initiate the Chest Pain/Acute Coronary Syndromes Protocol (see Attachment C) for any patients with suspected cardiac related chest pain.

B. Assessment

1. Nursing staff should complete a full nursing assessment, obtain a complete set of vital signs (HR, BP, RR, Temp, O2 sat), place the patient on continuous cardiopulmonary and pulse oximetry.
2. Nursing staff should perform a comprehensive pain assessment, including assessment of pain level using one of the approved pain scales. (see policy NUR-019 Pain Screening, Assessment and Management).
    i. Nursing staff will document at minimum the following:
        a. Character of pain

b. Pain intensity by patient self-report when possible.
c. Time of onset.
d. Duration.
e. Location.
f. Radiation.
g. Aggravating factors.
h. Alleviating factors.

3. Providers will perform a comprehensive evaluation within 15 minutes of the patient's arrival. This evaluation will include at a minimum the following components:
   i. History of Present Illness
      a. Pain: character of pain, onset, duration, timing of recurrent episodes, location, radiation, aggravating/alleviating factors.
      b. Associated symptoms: dyspnea, tachypnea, presyncope/syncope, nausea/vomiting, diaphoresis.
   ii. Past History
      a. Such as ischemic or other heart disease, diabetes, hypertension, smoking, high cholesterol, peripheral or cerebral artery disease, venous thromboembolism (VTE), pulmonary disease, upper gastrointestinal disease.
   iii. Medications & Allergies
      a. All meds but focused on antiplatelets, anticholesterol, calcium channel blockers, ACE inhibitors, angiotension II receptor blockers (ARBs), beta blockers, nitrates, antiarrhythmics, anticoagulants, phosphodiesterase inhibitors (i.e., Viagra®, Cialis®, and Revatio®).
   iv. Review of Systems
      a. Including but not limited to cardiorespiratory, neurologic or upper GI symptoms.
   v. Family History
      a. Such as ischemic heart disease, cerebrovascular accident (stroke), diabetes, sudden unexplained death, and VTE.
   vi. Social History
      a. Such as history of alcohol/recreational drug use, and smoking.
   vii. Physical Examination
      a. Provider will perform a focused evaluation of the patient looking for signs of possible congestive heart failure, valvular disease, chest wall tenderness, signs of poor peripheral or central perfusion, or other differential diagnostic considerations.

VI. MANAGEMENT OF PATIENT WITH CHEST PAIN

A. Vital signs (BP, HR, R, O2sat) will be assessed every 15 minutes and documented in the patient's medical record.
   1. Consult provider for vital signs:
      i. HR >120
      ii. SBP <90
      iii. RR >28
      iv. SaO2 <90%
   2. Document patient's height and weight

B. Place on pulse oximetry and measure SaO2. Administer supplemental oxygen to maintain oxygen saturation > 94%, for indications of respiratory distress, or other high-risk features for hypoxemia.
   1. Oxygen therapy is **not indicated** for SaO2 > 94% and may cause harm.

C. Initiate continuous cardiac monitoring, assess rhythm, and monitor for dysrhythmias.

D. Insert peripheral intravenous (IV) (18 gauge or larger) hep-lock or administer IV fluids as ordered.
   i. If IV fibrinolytics are ordered insert another peripheral IV.

E. Nursing staff will perform a complete nursing examination, including a comprehensive pain assessment that includes a pain intensity score using an approved pain scale.

F. Provider will perform a comprehensive evaluation of the patient within 15 minutes of arrival in the ED, including a comprehensive assessment of the patient's chest pain.

G. Diagnostic Imaging:
   1. An ECG will be obtained within 5 minutes of patient arrival in the ED by nursing staff.
      i. Report will be interpreted by the provider within 15 minutes of the patient's arrival in the ED.
      ii. Perform ECG at 15 to 30-minute intervals depending on patient status.
      ii. Interpretation of the report will be documented in the patient's medical record by the provider.
   2. A Chest x-ray will be obtained and interpreted within 30 minutes of patient arrival in the ED
   3. Additional diagnostic imaging to be obtained may include (if indicated):
      i. CT Chest/Thorax with contrast to rule out pulmonary embolism and aortic dissection.

H. Laboratory:
   1. The following labs should be obtained:
      i. ABG

ii. BNP
iii. CBC with differential
iv. CK Total
v. CK MB
vi. CMP
vii. CRP
viii. D-Dimer
ix. Fibrinogen
x. Magnesium
xi. Phosphorus
xii. PT/INR
xiii. PTT
xiv. Troponin-I
    a. Serial Troponin-I will be obtained at presentation and at 3 and 6 hours for all patients who present with symptoms consistent with ACS.
    b. Additional Troponin-I levels will be obtained beyond 6 hours in patients with normal troponins on serial examination when ECG changes and/or clinical presentation identify a suspicion for ACS.
xv. Urinalysis

I. NSTEMI/Unstable Angina (See Chest Pain/Acute Coronary Syndrome Protocol Attachment B)

1. NSTEMI
    i. Notify EMS/Air Evac for emergent transfer to higher-level medical center.
        a. Hospital staff should request an expected estimated time of arrival (ETA) from EMS/Air Evac dispatch. This time should be documented in the patient's medical record.
    ii. Perform serial ECG every 15 minutes. Place report in patient's medical record. Provider will document interpretation in patient's medical record.
    iii. See Chest Pain/Acute Coronary Syndrome Protocol for additional management.
2. Unstable Angina
    i. After full evaluation provider will make disposition determination (i.e. transfer, observation, or discharge).
    ii. Perform serial ECG every 15 to 30 minutes. Place report in patient's medical record. Provider will document interpretation in patient's medical record.
    iii. See Chest Pain/Acute Coronary Syndrome Protocol for additional management.

J. STEMI (See STEMI Protocol Attachment C)

1. Notify EMS/Air Evac for emergent transfer to a higher-level medical center.
2. Fibrinolytic therapy will be given to patients with STEMI and onset of ischemic symptoms within the previous 12 hours if the patient cannot be transferred to a higher-level medical center for a primary percutaneous coronary intervention (PCI) within 120 minutes (ACCF/AHA Guidelines, 2013).
3. Provider will perform a full evaluation including interpretation of the ECG to determine diagnosis of STEMI. If STEMI is identified the provider will determine the patient's eligibility for fibrinolytic therapy.
    i. Documentation of interpretation of the ECG and patient's eligibility for fibrinolytic therapy will be documented in the patient's medical record.
4. Risks and benefits of fibrinolytic therapy will be discussed with patient and/or patient representative by provider.
    i. Documentation of risks and benefits will be documented in the patient's medical record.
5. Fibrinolytic therapy will be administered within 30 minutes of patient arrival for patients determined to be eligible for treatment. See STEMI Protocol for administration and management of fibrinolytic therapy (ACCF/AHA Guidelines, 2013).

K. Medication Management

(See appropriate protocol for full medication management)

1. Nitrates
    i. Administer sublingual nitroglycerin every 5 minutes x 3 for continuing chest pain and then assess need for IV nitroglycerin (AHA, Guidelines, 2014).
    ii. Administer IV nitroglycerin for persistent ischemia, heart failure or hypertension (AHA Guidelines, 2014).
    iii. **Nitrates are contraindicated with recent use of a phosphodiesterase inhibitor (i.e., Viagra®, Cialis®, and Revatio®)** (AHA Guidelines, 2014)**.**
2. Pain Management
    i. IV morphine sulfate may be reasonable for continued ischemic chest pain despite maximally tolerated anti-ischemic medications (AHA Guidelines, 2013).
    ii. NSAIDS are contraindicated (except Aspirin) and should be discontinued during hospitalization (AHA Guidelines, 2013).
3. Anti-platelets
    i. Non-enteric-coated chewable Aspirin (162-324 mg) should be given to all patients with Non-ST-elevation ACS without

contraindications as soon as possible after presentation to the ED (AHA Guidelines, 2013).

ii. In patients with Non-ST-elevation ACS who are unable to take Aspirin due to a hypersensitivity or major gastrointestinal intolerance, a loading dose of (300-600 mg) of Clopidogrel should be given (AHA Guidelines, 2013).

iii. For STEMI patients receiving fibrinolytic therapy Aspirin (162-324mg loading dose) and Clopidogrel (300mg loading dose) for patients ≤75 years of age or 75mg dose for patients ≥75 years of age (ACCF/AHA Guidelines, 2013).

4. Anticoagulants
   i. In patients with Non-ST-elevation ACS anticoagulation in addition to antiplatelet therapy is recommended for all patients regardless of treatment strategy (AHA Guidelines, 2014).
   ii. Patients with STEMI undergoing reperfusion with fibrinolytic therapy should receive anticoagulant therapy for a minimum of 48 hours (ACCF/AHA Guidelines, 2013).
5. Beta Blockers
   i. Oral beta blockers may be initiated within the first 24 hours for patients with Non-ST-elevation ACS or STEMI who do not have the following contraindications:
      a. Signs of heart failure
      b. Low-output state
      c. Increased risk of cardiogenic shock
      d. Contraindications to beta blockade (i.e. PR interval >0.24 seconds, 2nd or 3rd degree heart block without a pacemaker, active asthma, or reactive airway disease)

      (AHA Guidelines, 2014; ACCF/AHA Guidelines, 2013).
   ii. In patients with Non-ST-elevation ACS and risk factors for shock administration of IV beta blockers is potentially harmful. (AHA Guidelines, 2014).
   iii. For patients with STEMI it is reasonable to administer IV beta blockers for when the patient is hypertensive or has ongoing ischemia and no contraindications (ACCF/AHA Guidelines, 2013).

VI. EDUCATION AND TRAINING

All hospital staff will be required to have orientation and on-going education and competency for chest pain and acute coronary syndromes that includes the following:

- Management and treatment of chest pain and acute coronary syndromes
- Management and treatment of STEMI
- Hospital Protocols including Chest Pain/Acute Coronary Syndrome and STEMI

- Fibrinolytic Therapy for STEMI

All nursing staff will also be certified in BCLS and ACLS according to the American Heart Association (AHA) standards of training. All clinical staff are required to have BCLS certification.

VII. QUALITY MONITORING

Hospital leadership including but not limited to, the Chief Clinical Officer (CCO) are responsible for ensuring that all individuals adhere to the requirements of this policy, procedures are implemented and followed at the Hospital and instances of non-compliance with the policy are reported to the Chief Clinical Officer and an incident report are completed.

The Quality Department will track and report the following data:

1. EMS/Air Evac notification of emergent transfer for NSTEMI or STEMI patients within 20 minutes of patient arrival.
2. Transfer of NSTEMI or STEMI patient to a higher-level medical center within a target goal of 60 minutes of patient arrival.
3. Completion of an appropriate MSE by the provider within 15 minutes of patient arrival.
4. Completion of an ECG within 5 minutes of patient arrival.
5. Completion of a Chest x-ray within 30 minutes of patient arrival.
6. Fibrinolytic therapy administered within 30 minutes of patient arrival for eligible patients.

Each Chest Pain/ACS/STEMI will be evaluated by the Quality Manager using the Cardiac Chest Pain/ACS/STEMI Outcome Review Form (see Attachment E). All cardiac chest pain events reviewed by the QM will be forwarded and reviewed by the CCO to determine compliance with hospital policy and procedure.

VII. REFERENCES

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VIII. ATTACHMENTS

Attachment A: 2020 ACLS Acute Coronary Syndromes Algorithm
Attachment B: Chest Pain/Acute Coronary Syndromes Protocol
Attachment C: STEMI Protocol
Attachment D: ECG Screening Criteria
Attachment E: Fibrinolytic Therapy Indications/Contraindications Checklist
Attachment F: TNKAse Dosing Instructions

REVISIONS/UPDATES

Date	Brief Description of Revision/Change