University of Virginia Medical Center
Clinical Decision Tool

TITLE:
Emergency Management for Suspicion of Cardiac Event

PURPOSE:
Increasingly, patients have multiple morbidities and are at risk of adverse events related or unrelated to the condition for which they were admitted. While there is a standard protocol for treating patients for STEMIs outside the hospital, there has not been a protocol for inpatient areas. Consequently these patients are often not quickly identified and do not receive care according to the same rapid response sequence. Other cardiac adverse events are also on the rise necessitating rapid identification and response. A clinical guideline will help non-cardiac medical and nursing staff respond rapidly and appropriately to possible cardiac events.

PATIENT POPULATION:
Define the patient population for whom the guideline or protocol is intended. Check appropriate box(s): X□ Adult Acute Care □ Adult Critical Care □ Pediatrics □ Ambulatory Care □ Emergency Department

TABLE OF CONTENTS:
For guidelines that are lengthy or have multiple appendices, it is helpful to include a table of contents with hyperlinks to the appropriate place in the document.

DEFINITIONS:
Electrocardiogram (ECG) used to diagnose cardiac events, such as myocardial infarction or atrial fibrillation, or other conditions with a cardiac effect, such as pulmonary embolus. ***Acute Coronary Syndrome (ACS***) represents a cardiac condition which falls on a continuum between unstable angina and non-ST elevated myocardial infarction. ***Independent Licensed Practitioners*** (LIP) represent independent practitioners including physicians, physician assistants and nurse practitioners, able to diagnose and order treatment for patients. ***NSTEMI*** is a non-ST elevated myocardial infarction which may be indicated by ECG and/or laboratory values (troponin I) and represents myocardial ischemia (reversible) or infarction ***STEMI*** is an acute ST elevated myocardial infarction representing active myocardial infarction

PATIENT ASSESSMENT/DOCUMENTATION:
ACS or STEMI should be suspected if the patient describes any of the following symptoms:

- Chest pain or discomfort
- Chest pressure or tightness
- "Heartburn" or epigastric pain
- Complaints of “heart racing” (HR >150 or irregular and >120)
- Complaints of “heart too slow” (HR < 50 and symptomatic)
- A syncopal episode or severe weakness in patients > 45 years old
- Difficulty breathing (with no obvious non-cardiac cause)
- Elderly, women and diabetic patients may present with atypical symptoms. When in doubt, obtain an ECG.
- In addition, any patient with new onset stroke symptoms should get an ECG.

If a patient displays the sudden onset of Acute Coronary symptoms, the nurse must assess the patient and obtain an ECG within 5 minutes. Obtain a new set of vital signs and continue monitoring until episode resolves. Leave the patient attached to the ECG in monitoring mode.

The LIP on the primary team must be notified and come to assess the patient. If the patient meets any of these clinical triggers, the MET team should also be paged on non-cardiac units.

The ECG should be read by the Primary Team LIP within 10 minutes. If suspicious for cardiac event, a Cardiologist should be immediately consulted. If suspicious of STEMI, page the CCU Fellow on call. If possible ACS, request ECG interpretation by the CCU resident or IRPA physician.

TREATMENT/DOCUMENTATION:

- If an adult patient displays the following sudden onset of Acute Coronary Syndrome (ACS) symptoms, the nurse is to report the event to the LIP and obtain an ECG (within 5 min.).
  - Chest pain or discomfort
  - Chest pressure or tightness
  - "Heartburn" or epigastric pain
  - Complaints of “heart racing” (HR >150 or irregular and >120)
  - Complaints of “heart too slow” (HR < 50 and symptomatic)

- A syncopal episode or severe weakness in patients > 45 years old
- Difficulty breathing (with no obvious non-cardiac cause)
- Elderly, women and diabetic patients may present with atypical symptoms. When in doubt, obtain an ECG.
- In addition, any patient with new onset stroke symptoms should get an ECG.
- ACTION: PAGE THE PRIMARY TEAM TO NOTIFY THEM OF THE EVENT.
- **Concurrent Assessment** (<10 minutes to complete):
- Enter an order in EPIC for a "Rapid 12 lead ECG" *before* entering any data on ECG machine. Order may be entered as a protocol order:

EPIC: order entry→Rapid 12 lead ECG→accept "Rapid 12 lead ECG for UVA IP ICU" and enter "chest pain" for reason and hit "accept"→protocol order→enter name of primary team Attending Physician

IF THE PATIENT MEETS CLINICAL TRIGGERS, PAGE THE MET TEAM.

- 12-lead ECG. Do not turn off the ECG machine or disconnect the leads until the LIP indicates no further ECG is needed. Mark the appropriate ECGs as "with chest pain" and "post chest pain." The ECG must be read by the LIP within 10 minutes.
- Vital signs and O2 saturation initially. Continue monitoring VS until episode resolved.
- IV access if not already established.
- **Interventions**:
- Place the patient on oxygen to goal of > 94% Pulse Ox as needed
- Someone should remain with the patient at all times until the episode is resolved or the LIP has determined it is not cardiac in origin.

- If a pre-existing order exists or a verbal order is obtained, the RN is to administer the following:
- Aspirin 81 mg x4 chewable (non-enteric-coated) given orally, crushed or chewed.
- Nitroglycerin SL 0.4 mg q3-5 min up to 3 doses if the BP is acceptable (SBP > 90). A new BP is needed before each dose of nitroglycerin and again 3-5 minutes after the dose.
- ***Note that there are certain conditions in which nitroglycerin is contraindicated or used with extreme caution, including severe aortic stenosis and hypertrophic cardiomyopathy.***
- Morphine is indicated for patients with ischemic pain not relieved by nitroglycerin. (standard dosing is 2 to 4 mg IVP; may give additional doses of 2 to 8 mg IV at 5- to 15- minute intervals)
- LIP from the primary team must read the ECG within 10 minutes and see the patient immediately. If STEMI is suspected, the CCU Fellow on Call (pager 1309) should be notified immediately. The CCU Fellow will initiate a STEMI Alert. For any suspicion of ECG changes (ST elevation, ST depression, Flattened or inverted T waves, Significant Arrhythmia), request ECG interpretation of the CCU resident or IRPA physician (pager 9241 for surgery services and 9558 for medicine).

Other medications and labs are ordered as needed according to the LIP discretion.

Recommendations include:

- Perform brief, targeted history, physical exam
- Obtain initial cardiac marker levels (troponin x 3 or until peaked), initial

electrolyte and coagulation studies

- Consider portable chest x-ray (<30 minutes)
- Consider beta blocker if not already prescribed and not contraindicated
- Interventions to control BP and HR
- Documentation of the event is required in the Epic electronic medical record by nursing and LIP.
- Obtain cardiology consult if suspicious of cardiac etiology**. Suspicion of ST elevated myocardial infarction (STEMI) requires emergent intervention and can be accessed by notifying the CCU fellow on call.**

A Pharmacist can be called to assist through MET activation.

DISCHARGE/FOLLOW-UP/PATIENT EDUCATION AND HAND-OFF OF CARE:

If the patient is diagnosed with an STEMI, the nurse prepares to give report to the cardiac catheterization staff. If not going immediately for a cardiac catheterization, prepare to send the patient to an intensive care setting. Hand off of Care is provided using a standardized format from the sending providers to each of the receiving providers. The LIP notifies family or significant others of events and treatment plans.

If the determination is made that episode was a probable cardiac event, the primary team in consultation with Cardiology will determine which service will provide primary care and whether or not the patient should be transferred to a unit with telemetry capabilities.

OUTCOME MEASURES:

Quality reports including sentinel events will be tracked and evaluated on an ongoing basis to determine if care is provided according to the standards outlined in the clinical guideline.

EDUCATION PLAN:

Life Support Learning Center will develop an educational program and carry out instruction to all inpatient nursing staff on performing an electrocardiogram. A CBL will be developed by Life Support Learning Center to educate nursing staff on the Clinical Guideline. As part of the Personal cAre Technician program, 12 lead ECG will be taught.

REFERENCES:

- AHA 2010 Handbook of Emergency Cardiovascular Care for Healthcare Providers
- http://www.projectupstart.com

- O'Gara, Patrick T., Kushner, Frederick G., Ascheim, Deborah D., Casey, Donald E., Chung, Mina K., de Lemos, James A., . . . Zhao, David X. (2013). 2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction: Executive Summary: A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation, 127*(4), 529-555. doi: 10.1161/CIR.0b013e3182742c84
- Davis T, Bluhm J, Burke R, Iqbal Q, Kim K, Kokoszka M, Larson T, Puppala V, Setterlund L, Vuong K, Zwank M. Diagnosis and treatment of chest pain and acute coronary syndrome (ACS). *Bloomington (MN): Institute for Clinical Systems Improvement (ICSI)*; 2012 Nov., 91

DISCLAIMER:

Guidelines or protocols are general and cannot take into account all of the circumstances of a particular patient. Judgment regarding the propriety of using an specific procedure or guideline with a particular patient remains with the patient's physician, nurse, or other health care professional, taking into account the individual circumstances presented by the patient.

REVISION HISTORY

Date	Version	Description	Owner(s) Name, Credentials, Title	Committee Approval*	Date of Approval
3/2014	1	New	Suzanne Fuhrmeister, Acute Care Clinical Nurse Specialist	Patient Care	March 6, 2014

***Adults-** Patient Care Committee approval is required if the guideline will be used in multiple areas or if the local area does not have a practice committee to approve the guideline. If approval is required through other committees (such as patient safety, infection control, etc), please list those committees and dates of approval as well.

***Pediatrics-** Children's Hospital Clinical Practice approval is required if the guideline will be used in multiple areas or if the local area does not have a practice committee to approve the guideline. If approval is required through other committees (such as patient safety, infection control, etc), please list those committees and dates of approval as well.