UTSW/BioTel EMS TRAINING BULLETIN

September 2014

EMS TB 14-001

Management of Patients with Chest Pain

Cross-Reference: BioTel 2014-2016 Chest Pain Treatment Guidelines (Rev D, pp. 33-34)

Purpose:

1. To ensure that EMS Providers provide appropriate care to patients with chest pain or other symptoms that might indicate a STEMI, Non-STEMI, ACS (Acute Coronary Syndrome), or other acute cardiac ischemia.
2. To ensure that a timely 12-Lead ECG is obtained, is transmitted to BioTel and the receiving hospital, and is attached to the Electronic Patient Care Report (ePCR).

Training Points:

1. A 12-Lead ECG SHALL ALWAYS be obtained, as soon as possible, when a patient complains of chest pain, pressure or discomfort.

2. A 12-Lead ECG SHOULD be considered when a patient complains of symptoms other than chest pain, as a possible “anginal equivalent”, such as:
    a. Shortness of breath or difficulty breathing
    b. Epigastric pain or “indigestion”
    c. Non-traumatic pain in the back, neck, jaw, shoulder or arm
    d. Diaphoresis
    e. Nausea or vomiting
    f. Extreme fatigue
    g. Syncope or near-syncope, or feeling faint, weak or dizzy
    h. Palpitations
    i. A sense of “impending doom”

3. Anginal equivalents occur more often in the elderly, diabetics, women and those with cardiac risk factors. Such symptoms mandate a 12-Lead ECG in these high-risk groups.

4. Prominent risk factors for STEMI include:
    a. History of coronary artery disease
    b. Diabetes
    c. Hypertension
    d. High cholesterol
    e. Smoking or other tobacco use
    f. Family history of heart disease (myocardial infarction or coronary artery disease)
    g. Sedentary lifestyle
    h. Obesity

5. A 3-Lead or 4-Lead ECG does not suffice, and it does not replace a 12-Lead ECG. A 3-Lead or 4-Lead ECG only visualizes a small portion of the heart – therefore, a STEMI may be missed if a 12-Lead ECG is not performed.

6. An ECG suggestive of a STEMI shall ALWAYS be transmitted to BioTel AND to the receiving hospital Emergency Department.

7. STEMI activations will take place prior to hospital arrival, in accordance with the particular STEMI Center's hospital policies.

8. All hard-copy (paper) ECGs shall be given to the receiving hospital Emergency Department staff, and the electronic file shall be attached to the ePCR.

CHEST PAIN/DISCOMFORT

Inclusion Criteria: Chest pain suspected to be ischemic in nature, even when caused by stimulant toxicity. This may include classic presentations or anginal equivalents, e.g. epigastric pain/pressure, shoulder, neck or jaw pain/pressure, indigestion, shortness of breath, diaphoresis, or altered mental status. Acute coronary syndrome (ACS) in diabetic patients, women and the elderly may not present with classic symptoms. Ischemic chest pain is a very unusual presentation in pediatric patients. Contact BioTel for all pediatric care under this guideline.

SPECIAL NOTE: Do NOT administer nitroglycerin to any patient who has taken Viagra® (sildenafil), Levitra® (vardenafil), or Cialis® (tadalafil) within the past 36 hours.

Basic Level

1. Assess and support ABCs.
2. Place the patient in position of comfort. Minimize patient exertion. If the patient is hypotensive, place him/her supine, and treat according to **SHOCK** Guidelines.
3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.
4. Administer aspirin 324 mg (4 baby aspirins) ***OR*** 325 mg (one adult aspirin) by mouth (chewed before swallowing), regardless of whether patient has taken aspirin prior to EMS arrival.
5. Begin transport as soon as possible.

Advanced Level

6. Continuously monitor ECG and $ETCO_2$ (if available) until patient care has been transferred to hospital staff. Treat arrhythmias under the appropriate guideline.
7. Obtain and transmit a 12-Lead ECG. Consult with BioTel, as needed. Obtain a 12-lead ECG BEFORE giving any nitroglycerin. **NOTE:** 3-lead ECG monitoring is not a substitute for a 12-lead ECG.
8. Establish IV/IO access at a TKO rate or use a saline lock. Do not delay nitroglycerin administration while attempting to establish vascular access. **However**, in patients with ECG evidence suggestive of an inferior wall MI, vascular access MUST be established before administering the first nitroglycerin dose.
9. 12-lead interpretation: Identify ST-elevation myocardial infarction (STEMI) patients.
    a. **Inferior Wall Infarction (ST elevation - leads II, III, aVF) with a systolic blood pressure (SBP):**
        i. **Less than 90 mmHg:**
            1. Position patient flat or with legs elevated.
            2. Administer 20 mL/kg fluid bolus IV/IO. If SBP remains below 90 mmHg and no pulmonary edema is present, repeat fluid bolus as needed to keep SBP greater than 90 mmHg. Paramedics may administer up to 1 liter total, cumulative fluid volume under standing orders.
            3. BioTel may authorize the administration of morphine or fentanyl in this patient.
        ii. **90 mmHg or greater:**
            1. Obtain IV/IO access prior to nitroglycerin administration.
            2. Administer nitroglycerin 0.4 mg SL; may repeat every 5 minutes for a total of 3 doses. Observe for hypotension.
            3. Morphine 2 mg to 4 mg increments, slow IVP, up to a total maximum cumulative dose of 8 mg for pain unrelieved by 3 doses of nitroglycerin. Do not administer morphine if SBP falls below 90 mmHg. **NOTE:** There is no uniform requirement for all agencies to carry morphine; it is an optional medication; ***OR***

4. Fentanyl 1 mcg/kg IN or slow IVP. May repeat every 15 minutes. Do not exceed 200 mcg as a total cumulative dose. **NOTE:** There is no uniform requirement for all agencies to carry fentanyl; it is an optional medication.

b. **Normal ECG and all other infarctions:**
   i. Do not delay nitroglycerin administration for vascular access attempts.
   ii. Administer nitroglycerin 0.4 mg SL; may repeat every 5 minutes, up to a maximum total of 3 doses, as long as SBP remains above 90 mmHg.
   iii. Morphine 2 mg – 4 mg increments, slow IVP, up to a maximum cumulative dose of 8 mg, for pain unrelieved by 3 doses of nitroglycerin, as long as SBP remains above 90 mmHg. **NOTE:** There is no uniform requirement for all agencies to carry morphine; it is an optional medication;
   iv. Fentanyl 1 mcg/kg via IN or slow IVP. May repeat every 15 minutes. Do not exceed 200 mcg total cumulative dose. **NOTE:** There is no uniform requirement for all agencies to carry fentanyl; it is an optional medication.

10. If the systolic blood pressure falls below 90 mmHg in response to nitroglycerin, morphine, or fentanyl:
    a. Position the patient supine or with the legs elevated, if tolerated.
    b. Do not administer additional nitroglycerin or morphine (under standing orders).
    c. Administer a 20 mL/kg Normal Saline bolus IV:
       i. If SBP remains below 90 mmHg and pulmonary edema is not present, repeat fluid bolus as needed to keep SBP greater than 90 mmHg. Paramedics may administer up to 1-liter total fluid volume under standing orders.
       ii. BioTel may authorize the administration of morphine or fentanyl for this patient.

11. If the chest pain is thought to be stimulant-induced (e.g. cocaine, amphetamine or ecstasy), administer:
    a. Diazepam 2.5 – 5 mg slow IVP/IO/IN/IM; May repeat up to a total, maximum, cumulative dose of 10 mg; **OR**
    b. Midazolam 2.5 – 5 mg slow IVP/IO/IN/IM; May repeat up to a total, maximum, cumulative dose of 10 mg.
    c. Monitor closely for respiratory depression.
    d. Contact BioTel for authorization for additional dosing.

12. Monitor the patient's temperature frequently. Be prepared to cool the patient aggressively, but do not cause shivering.

13. Transport patients with a suspected STEMI to a hospital with immediate cardiac catheterization lab capabilities. You **must** contact either BioTel or the receiving hospital as soon as possible, so that the cardiac catheterization lab can be activated promptly. When in doubt, consult with BioTel to confirm hospital capability.

14. For additional patient care considerations not covered under standing orders, consult BioTel.