Syllabus/Course Schedule
Course: 12 Lead ECG Interpretation

Course Description:

This course has been designed to assist both the seasoned paramedic and third-semester paramedic student to formulate and implement a treatment plan for patients experiencing a cardiovascular complaint through the refined skill of ST segment identification and correlation with affected cardiac physiology in a variety of patient cases.

Course Delivery Method:

This educational event will be a 16 hour (2 day) course delivered in a traditional classroom setting with assessments completed in the high fidelity simulation center.

Course Materials:

The following materials will be provided to the participants:

- Course Syllabus/Schedule of Events/Sim Center Rules & Regulations
- Pre-test
- Project Case Studies, ECG Practice Worksheets, Treatment Worksheets

The participant should arrive to class with the following materials:

- Personal Stethoscope (Day 2 only)
- Calipers (if preferred)
- Pen/Pencil

Learning Outcomes:

Upon successful completion of this course, students will be able to:

1. Demonstrate effective 12 Lead ECG interpretation skills.
   1a. Identify ST segment elevation and/or depression in a variety of 12 lead ECG examples.
   1b. Identify axis deviation, hemi-blocks, and left ventricular hypertrophy in a variety of 12 lead ECG examples.
1c. Perform accurate posterior, right-side ECG placement in patients presenting with inferior wall injury or infarction on the associated 12 Lead ECG.

2. Justify treatment choices based on assessment findings and the associated pathophysiology affecting patients suffering a cardiovascular emergency.
   2a. Correspond the area of ischemia or injury to the findings on a 12 Lead ECG.
   2b. Recognize the indications and contraindications for medication administration based on ECG findings.

3. Formulate and implement treatment plans for patients experiencing cardiovascular complaints.
   3a. Develop a strategy to treat a patient experiencing a cardiovascular complaint by accurately integrating the findings from a 12 lead ECG.

Course Integrity:

As a member of this course, you are expected to adhere to an academic code of conduct of professionalism. Also, no participant is to engage in discussions of the simulated scenarios with anyone not involved directly in the patient encounter. Failure to adhere to this code of conduct will result in disciplinary action up to and including dismissal from the course.

Procedures for Evaluation:

Participants will receive informal feedback during individual projects and an instructional assessment of the efforts projected during group sessions in the form of a rubric. Final feedback will be provided as Instructional Assessment of the student’s ability to navigate a simulated patient encounter in both an informal discussion as well as an instructional rubric. Additionally, the learner will be asked to perform a self-assessment of their experience in the simulation center documenting a critical reflection on the event. To conclude the learning session, students will be asked to evaluate the instructor as well as the instructional event to guide future course delivery.
## Student Information – Timeline of Events:

### Day 1: (Start time: 1000   End time: 1800)

<table>
<thead>
<tr>
<th>Topic #1: Interpretation Skills</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome, Introductions, and expectations</td>
<td>20 minutes</td>
</tr>
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</tr>
<tr>
<td>Break</td>
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</tr>
<tr>
<td>Group Break Out Session Activity – 12 Lead ECG Interpretation Skills</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Post-Activity Discussion</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Lunch</td>
<td>1 hour</td>
</tr>
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</table>

- Skill practice: Right-Side ECG Placement (rotate through lunch)

<table>
<thead>
<tr>
<th>Topic #2: Justifying Treatment Choices</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic Introduction</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Presentation: ST segment changes and associated physiology</td>
<td>40 minutes</td>
</tr>
<tr>
<td>Break</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Group Break Out Session Activity – Case Study Analysis (part 1)</td>
<td>1 hour</td>
</tr>
<tr>
<td>Case Study Discussion</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Break</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Group Break Out Session Activity – Case Study Analysis (part 2)</td>
<td>1 hour</td>
</tr>
<tr>
<td>Final Case Study Discussion</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Review and Preparation for Day 2</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>

### Day 2: (Start time: 1000   End time: 1800)

<table>
<thead>
<tr>
<th>Topic #3: Implementing Treatment Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time:</td>
</tr>
<tr>
<td>1000</td>
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<tr>
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<td>1120</td>
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<td>1320</td>
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<td>1420</td>
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<tr>
<td>1520</td>
</tr>
<tr>
<td>1620</td>
</tr>
<tr>
<td>1720</td>
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</tbody>
</table>
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**Course Description:**

This course has been designed to assist both the seasoned paramedic and third-semester paramedic student to formulate and implement a treatment plan for patients experiencing a cardiovascular complaint through the refined skill of ST segment identification and correlation with affected cardiac physiology in a variety of patient cases.

**Prerequisites:**

At a minimum, the learner should verify successful completion of didactic and laboratory curriculum for cardiovascular emergencies. Students in internships or currently certified paramedics are welcome to attend.

**Course Time/Delivery Method:**

This educational event will be a 16 hour (2 day) course delivered in a traditional classroom setting with assessments completed in the high fidelity simulation center.

**Maximum Classroom Size:** 10 participants
Course Materials:

The following materials will be provided to the participants:

- Course Syllabus/Schedule of Events
- 12 Lead Interpretation Pre-Test
- ECG Practice Worksheets
- Project Case Studies
- Treatment Worksheets
- Simulation Center Rules and Regulations
- Simulation Center Confidentiality Agreement

The following materials are necessary to host the entire training event:

- Variety of Paramedic Textbooks as Reference Material
- Colored Pencils
- Pencils
- Enlarged 3D Heart Model
- Torso Manikin
- Electrodes
- First Out Bag (fully stocked)
- Medication Bag (fully stocked)
- Airway Bag (fully stocked)
- 2 High Fidelity Simulation Manikins
- Video Camera system
- 12 Lead ECG Monitor
- 12 Lead cables
- Pacing/Defibrillating cables
- 5 additional instructors for breakout sessions on Day 2 only
- 5 (vials/prefills/bags) of the following medications
  - Epinephrine
  - Dopamine
  - Atropine
  - Nitroglycerin
  - Aspirin
  - Morphine
  - Adenosine
  - Procaainamide
  - Lidocaine
  - Amiodarone
  - Vasopressin
  - Normal Saline
- Oxygen tank with regulator
- Stretcher
- Printed Simulation Scenarios
  - Chest Pain
  - Acute Coronary Syndrome
  - Acute Myocardial Infarction with Hypotension
Learning Outcomes:

Upon successful completion of this course, students will be able to:

1. Demonstrate effective 12 Lead ECG interpretation skills.
   1a. Identify ST segment elevation and/or depression in a variety of 12 lead ECG examples.
   1b. Identify axis deviation, hemi-blocks, and left ventricular hypertrophy in a variety of 12 lead ECG examples.
   1c. Perform accurate posterior, right-side ECG placement in patients presenting with inferior wall injury or infarction on the associated 12 Lead ECG.

2. Justify treatment choices based on assessment findings and the associated pathophysiology affecting patients suffering a cardiovascular emergency.
   2a. Correspond the area of ischemia or injury to the findings on a 12 Lead ECG.
   2b. Recognize the indications and contraindications for medication administration based on ECG findings.

3. Formulate and implement treatment plans for patients experiencing cardiovascular complaints.
   3a. Develop a strategy to treat a patient experiencing a cardiovascular complaint by accurately integrating the findings from a 12 lead ECG.

Formative Assessments:

- Pre-test: 12 Lead ECG Interpretation
- ECG Practice Worksheets
- Right-Sided ECG Placement
- Project Case Study
- Treatment Worksheet
- Simulation Scenario
  - Student Simulation Experience Report
  - Instructor Simulation Assessment Report

**Overarching Timeline of Events:**

**Day 1:** (Start time: 1000  End time: 1800)

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<tbody>
<tr>
<td>Breakout Session #1 Simulation Testing Station - 1</td>
<td>Breakout Session #2 Video Analysis &amp; Student Experience</td>
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<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>1020</td>
<td>Group 1</td>
<td>Group 3</td>
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<tr>
<td>1120</td>
<td>Group 5</td>
<td>Group 1</td>
</tr>
<tr>
<td>1220</td>
<td>Lunch</td>
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<tr>
<td>1320</td>
<td>Group 4</td>
<td>Group 5</td>
</tr>
<tr>
<td>1420</td>
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<tr>
<td>1520</td>
<td>Group 2</td>
<td>Group 3</td>
</tr>
<tr>
<td>1620</td>
<td>Group 2</td>
<td>Group 4</td>
</tr>
<tr>
<td>1720</td>
<td>Wrap up session &amp; course evaluation</td>
<td></td>
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### Instructional Method – Topic #1: Demonstrating 12 Lead ECG Interpretation Skills

**Topic Description:**

This session will identify individual interpretation competencies and any limitations to assist in delivering an effective training session. Participants will be asked to take a pre-test on their 12 Lead ECG Interpretation skills. Once this has been completed, the session will introduce learners to ST segment changes, axis deviation, hemiblocks, and ventricular enlargement to ensure a solid foundation for instructional development.

**Estimated Time of Delivery** – 2.5 hours

**Topic Introduction:**

- Welcome, Introductions, and Expectations:

  “Hello, and welcome to the 12 Lead ECG Interpretation Training course. My name is ___________ and I am joined today with fellow instructor _____________. Our purpose for this two-day training session is to make each of you more confident in your abilities to manage cardiac patients in need of pre-hospital care. I would like to take a minute to find out a little bit about each of you, your training level, and years of experience.”

**INSTRUCTIONAL NOTE:** As participants are introducing themselves, either the primary or secondary facilitator should track the number of EMT’s, 3rd semester paramedic students, and field medics. It would also be advisable to track the years of experience in the room. After all learners have completed their introductions, the facilitator should reinforce the purpose of the training, and ask the group to list their expectations of the session. The instructor should record these expectations on a dry erase board or perhaps on poster board and hang it up for all to view. The purpose, to enhance the environment where the group has input into the course delivery and remind the teachers what items are of particular interest as progressing through the topics.

**INSTRUCTIONAL NOTE:** Directions for “Pre-Test: 12 Lead ECG” This is an opportunity for participants to practice the skills they are confident in with regards to interpretation.
MATERIALS FOR THIS PROJECT:

- Pencils
- Pre-Test 12 Lead ECG Worksheet

DIRECTIONS TO THE STUDENT: Ask the students to take a few minutes to interpret the sample 12 leads provided. Learners should locate the ST segment elevation or depression, and provide an interpretation of their findings. Encourage students to provide any additional information they may be able to provide as a part of their analysis (ie: hemiblocks, axis deviation, etc.). Collect the pretests and have the secondary facilitator analyze the results as the primary instructor begins the first presentation.

- Power Point Presentation (12 Lead ECG Interpretation – Part 1): Slide number 1
  The best way to gain confidence in interpretation skills is to have a foundational understanding of the 12 lead, its measurements, and shortcomings.

- Slide number 2
  For this course, we will be utilizing the Bob Page 12 Lead ECG Interpretation text.

- Slide number 3
  The primary objective for this session is to demonstrate the ability to effectively interpret 12 Leads.

- Slide number 4
  The topics we will uncover before lunch today will include the identification of ST segment elevation and depression, axis deviation, hemi-blocks, and left ventricular hypertrophy. Finally when we break for lunch, you will get an opportunity to perform a right sided ECG placement for patients that present with an inferior wall infarction.

- Slide number 5
  Let’s begin with a refresher of the 12 Lead Printout.
First it is necessary to know what the ECG machine will accurately measure. They can identify intervals such as the PRI, QRS, and QT. Also the ECG can identify the voltage of individual complexes which is helpful in recognition of such conditions as ventricular hypertrophy. Finally, it can also detect the axis angle of the electrical impulses.

Depending on the type of machine you are using, the printout will provide measurements in either milliseconds or seconds. In the example listed on this page, it is listed in seconds.

Voltage is identified in either millimeters or millivolts. If the monitor indicates a positive number, then that represents height above the isoelectric line in contrast to negative numbers which illustrates the depth below the isoelectric line.

For as accurate as the technology is, there are areas where the computer cannot identify what it sees. This includes heart blocks, and wide complex tachycardias.

If you want to improve your interpretation skills, then you will need to find the isoelectric line at the bottom of the calibration spike, and confirm that you have placed the leads on the patient’s body correctly. If you have, the V leads will show a progression in the size of the R waves.
Then you will want to look at the R waves. This picture provides you an example of good and poor R wave progression.

The patient in Figure 2-10 needs to have her leads repositioned to improve the analysis.

- Slide number 13

Axis and Hemiblocks can tell us more about the severity of our patient’s condition.

- Slide number 14

We will begin with an explanation of axis and how it is analyzed on the ECG strip.

- Slide number 15

Axis is about the direction of travel the electricity travels in.

- Slide number 16

We look for the axis based on the QRS complex as it is seen in leads 1-3.

- Slide number 17

Bob Page has provided us with a “cheat sheet” that we can utilize on the ambulance.

INSTRUCTIONAL NOTE: At this point, it may be helpful to provide the booklet that the learners will use during the group breakout session. The facilitator should point out the chart on page 1 for students to use as they progress through this section of the lesson.

- Slide number 18

Using your axis chart, and the picture represented on the slide you will identify that all the QRS complexes are in an upward pattern indicating that the electricity is traveling in the expected pattern.

- Slide number 19
The next key points include the two types of left axis deviation. One is referred to as physiological and the other pathological left axis.

- **Slide number 20**

  The first type of axis is common among those patients that are obese. Lead 1 is upright, while Lead 2 can be either up or equidistant and Lead 3 will have a negative deflection. This negative deflection in Lead 3 is the result of the angle of electricity traveling toward the left as seen in the picture by the arrow.

- **Slide number 21**

  A pathological left axis indicates a problem involving a blockage of the anterior fascicle in the purkinje fibers of the ventricles and will present with both Lead 2 and 3 in a negative deflection.

- **Slide number 22**

  The next type of axis deviation we are looking at is a right axis deviation which is considered a normal finding in children, but not in adults. This type of axis can tell you a lot about the patient. First, it indicates a blockage of the posterior fascicle of the purkinje fibers, but it can also confirm a history of right sided heart failure, right ventricular enlargement, or a pulmonary embolism. In this case the electricity is traveling toward Lead 3 which means that lead 1-2 are negative, while lead 3 is upright.

- **Slide number 23**

  The last axis deviation is referred to as Extreme Right Axis Deviation and presents itself on the ECG with a negative inflection in all three leads. Because the electricity is traveling away from the ventricles, then the impulse is originating from the apex of the heart and will be wide and fast…ventricular tachycardia.

- **Slide number 24**

  Now I need to explain why we care so much about these deviations and how they relate to hemiblocks.
The purkinje fibers are responsible for creating the contraction of the ventricles, but for this to happen, they are split into three fascicles. One fascicle is all that is needed to contract the right ventricle because it represents the low pressure (preload). The left ventricle has to push blood out of the heart against the afterload as a result, it needs two fascicles to contract against this high pressure.

If a patient is complaining of chest pain and you find a hemiblock, their mortality rate increases by 4 times. There is a bigger risk for a 3rd degree heart block and can tell you about the stability of the anterior arteries.

If there is a pathological left axis deviation, it tells you that if the patient experiences an anterior wall MI then the LAD artery is blocked and is not providing perfusion to this fascicle which can increase the mortality rate.

A left posterior hemiblock is worse than an anterior one because it requires blood from the circumflex artery, and your patient will most likely present with signs and symptoms of right ventricular hypertrophy. These patients are more likely than others to be in hypotension and possibly cardiogenic shock.

INSTRUCTIONAL NOTE: Upon their return ask the students to break into small groups.

MATERIALS FOR THIS PROJECT:

- Colored pencils
DIRECTIONS TO THE STUDENT: Once everyone is settled into position, have the learners work together in their teams to identify axis, hemiblocks and the presence of any ST segment changes. Ask them to color in the area to the isoelectric line as they find those ST segment changes. Then the learner should write in beneath the picture if the representation is that of elevation or depression. It may be necessary for the instructor to draw an example on the dry erase board and demonstrate how to color in the region for ST elevation/depression. As the facilitator it will be necessary to walk around the room, observe student progress, and provide guidance when necessary. Then, while the students using their cheat sheet, have them label the 12 Lead for what the current axis deviation is for each one. Ask the students to identify a hemiblock (if present) and cross out the correct fascicle on the picture. Finally, have the participants note any ventricular enlargement noted on the ECG. Keep repeating this process for each page using a different colored pencil for each page. This worksheet is meant to be a document students may keep as reference material and does not need to be collected.

- Slide number 31

INSTRUCTIONAL NOTE: When the 30-minute time limit is up, ask the students to provide their answers for each page in the workbook. Work with them through the questions and explain why their responses are right or wrong. Once this is completed. Ask the students to identify the signs and symptoms that might be seen in the patient who’s ECG indicates right axis deviation, and encourage them to make notes on the corresponding ECG in the workbook. (Reminder: Right Axis deviation will appear with a left posterior hemiblock and present with right ventricular hypertrophy, JVD, pedal edema, and possibly cardiogenic shock.) During this session, have the secondary instructor set up two stations with a torso, monitor, and ECG leads in each.

- Slide number 32
Dismiss students for lunch and have them cycle through the two stations to practice right sided ECG placement.

MATERIALS FOR THIS PROJECT:

- Chest torso x2
- ECG cables, monitor, and ECG tabs

DIRECTIONS TO THE STUDENT: Have the learners break into two groups and cycle through the two stations. Show students the proper technique for right-sided ECG placement, and then ask each person to take turns setting up and placing the leads in the appropriate manner. Make sure that you, as the facilitator, are paying close attention to each participant’s actions and provide praise and correction as long as you begin and end with a positive note.

Complete Listing of Resources for Topic #1: ECG Interpretation Skills

- Power Point Presentation – 12 Lead ECG Interpretation Part 1
- Pre-Test: 12 Lead ECG
- 12 Lead ECG – ST, Axis, Hemiblock Workbook
- Colored pencils
- 2 Chest torso’s
- Poster board
- Markers
- ECG monitor
- ECG cables
- ECG tabs
- Bob Page Textbook
<table>
<thead>
<tr>
<th>I</th>
<th>aVR</th>
<th>V1</th>
<th>V4</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>aVL</td>
<td>V2</td>
<td>V5</td>
</tr>
<tr>
<td>III</td>
<td>aVF</td>
<td>V3</td>
<td>V6</td>
</tr>
</tbody>
</table>

| "I"  | Inferior | Right Coronary Artery (RCA) |
| "See" | Septal    | Left Anterior Descending (LAD) |
| "All" | Anterior  | Left Anterior Descending (LAD) |
| "Leads" | Lateral   | Circumflex Artery |

### Rapid Axis and Hemiblock Chart

<table>
<thead>
<tr>
<th>Axis</th>
<th>Lead I</th>
<th>Lead II</th>
<th>Lead III</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Axis 0° to 90°</td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td></td>
</tr>
<tr>
<td>Physiological Left Axis 0° to −40°</td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td></td>
</tr>
<tr>
<td>Pathological Left Axis −40° to −90°</td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td>Anterior Hemiblock</td>
</tr>
<tr>
<td>Right Axis 90° to 180°</td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td>Posterior Hemiblock</td>
</tr>
<tr>
<td>Extreme Right Axis &gt;180°</td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td><img src="#" alt="Graph" /></td>
<td>Ventricular in origin</td>
</tr>
</tbody>
</table>

On the following worksheets, please split into your groups and identify the following items for each rhythm and color in any noted ST segment changes.
Axis:

ST segment changes? 
Hemiblock Present? 
Left Ventricular Enlargement?
Axis:
ST segment changes?
Hemiblock Present?
Left Ventricular Enlargement?
Axis:

<table>
<thead>
<tr>
<th>ST segment changes?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemiblock Present?</td>
</tr>
<tr>
<td>Left Ventricular Enlargement?</td>
</tr>
<tr>
<td>Axis:</td>
</tr>
<tr>
<td>---------------</td>
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</table>

- Vent. rate: 63 BPM
- PR interval: 132 ms
- QRS duration: 84 ms
- QT/QTc: 504/512 ms
- P–R–T axes: 49 48 153
Axis:

<table>
<thead>
<tr>
<th>ST segment changes?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemiblock Present?</td>
<td></td>
</tr>
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<td>Left Ventricular Enlargement?</td>
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Axis:

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<tr>
<td>Axis:</td>
<td>ST segment changes?</td>
</tr>
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<td>---------------</td>
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![Image of heart diagram]
Axis:
ST segment changes?
Hemiblock Present?
Left Ventricular Enlargement?
<table>
<thead>
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<th>Axis:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ST segment changes?</td>
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<tr>
<td>Hemiblock Present?</td>
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<td>Left Ventricular Enlargement?</td>
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<td>Hemiblock Present?</td>
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<td>Left Ventricular Enlargement?</td>
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<th>ST segment changes?</th>
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<tbody>
<tr>
<td>Hemiblock Present?</td>
<td></td>
</tr>
<tr>
<td>Left Ventricular Enlargement?</td>
<td></td>
</tr>
</tbody>
</table>

- Vent. rate: 112 bpm
- PR interval: * ms
- QRS duration: 68 ms
- QT/QTc: 324/442 ms
- P-R-T axes: 57 43 101
Axis:

| ST segment changes? |  
| Hemiblock Present? |  
| Left Ventricular Enlargement? |  

![ECG Image]
<table>
<thead>
<tr>
<th>Axis:</th>
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</thead>
<tbody>
<tr>
<td>ST segment changes?</td>
</tr>
<tr>
<td>Hemiblock Present?</td>
</tr>
<tr>
<td>Left Ventricular Enlargement?</td>
</tr>
</tbody>
</table>
HR (bpm): 77 (lead II)
R-R (ms): 779
P dur (ms): 68
PR int (ms): 132
QRS dur (ms): 88
P/R/T axis: 23/4/36
QT/Qtc (ms): 376/416

Axis:
ST segment changes?
Hemiblock Present?
Left Ventricular Enlargement?
Axis:

ST segment changes?  
Hemiblock Present?  
Left Ventricular Enlargement?
Instructional Method – Topic #2: Justifying Treatment Choices

**Topic Description:**

This session specifically re-addresses and builds upon the information gleaned from Topic #1. Participants will take the ST elevation/depression skills learned, to identify the coronary vessels involved based on the corresponding lead. To further promote problem-solving and critical thinking skills, the instructor will provide a written case study depicting full patient presentation scenario along with the corresponding 12 lead ECG’s. Students will work together in small groups to identify the ST segment changes to the area of the heart affected (ischemic or injured) in the case. Finally, the field providers will link the pathology affecting the cardiovascular system to the assessment findings and make a determination on the appropriate medication administration necessary to alleviate the patient’s condition.

*Estimated Time of Topic Delivery* – 5 hours

**Topic Introduction:**

- Power Point Presentation (12 Lead ECG Interpretation – Part 2): Slide number 1

  As advanced life support providers, you are required to make accurate decisions under the license of Medical Director with regards to patient care and appropriate medication administration.

- Slide number 2

  This presentation is based on the textbook for this course written by Bob Page (2005). You may wish to have it available for questions and clarification as needed. (Chapter 7-9)

- Slide number 3

- Slide number 4

- Slide number 5

  To begin, we will review the supply of blood feeding the heart muscle
Slide number 6

- Where is the Right Coronary Artery located in the picture?
- What parts of the heart receive its blood supply from it?
- **Key Note:**
  - that the RCA provides blood to the:
    - SA node in 55%
    - AV node in 90%

Slide number 7

- When we review the internal anatomy of the heart and it’s electrical system, what can you identify about the myocardium in the right ventricle versus the left?
- Where does the right atrium pump blood from?
- How does the body keep the “container” full?
- If there is an occlusion to the right artery, can the myocardium on the right side pump adequately?
- If it can’t pump will it ask the body to help by causing the vasoconstriction necessary to keep the container full or primed to prevent increased workload?
- But what is the first line treatment given to a patient experiencing chest pain?
- What does nitroglycerin do?
- How would that impact the “container” in someone who is depending on the vasoconstriction to reduce workload on injured right myocardial tissue?
- What will you see physiologically in your vital signs after administration of nitroglycerin if there is right sided involvement?
- How can we reduce this mistake?
- Where is the Left Coronary Artery in the picture? And where is the Left Anterior Descending?

- What parts of the heart receive blood from the LAD?

- Where is the Left Circumflex branch?

- What part does it feed?

- **Key Note:**

  - The Circ. Feeds the
  - SA node in 45%
  - AV node in 10%

- Slide number 9

  - So now we are going to apply that understanding of coronary blood supply to the changes seen in the ECG in the setting of an MI

- Slide number 10

  - There are three points in triaging a cardiac patient that we are going to discuss

- Slide number 11 (Page, 2005, Chapter 8; figure 8-3)

  - What can ST segment elevation indicate?
  
  - How will we identify this on the ECG?

  - What does transmural injury mean?

  - Why does this matter?

- Slide number 12

  - What can you identify in the ECG presented?

  - Where is the elevation at?

  - Depression?

- Slide number 13
- What does reciprocal mean?
- How is it represented on a 12 Lead?
- What can cause ST depression?
  - What does the term subendocardial mean?
  - What does it mean to our assessment and history taking skills if meds can cause ST depression?
- What if you don’t see any ST elevation for it to be reciprocal for?
- Can we prevent permanent damage?
- Why is it important then to do a 12 lead before the administration of NTG?

➤ Slide number 14

- Let’s revisit the previous ECG one more time.
- Is elevation noted with the depression?
- Is it reciprocal?
- What does this tell us about our patient just on the basis of this ECG?

➤ Slide number 15 (Page, 2005, Chapter 8; figure 8-5)

- We next want to consider what Inverted T waves indicate
- Can you identify the T wave inversion on this ECG?
- Reminder:
  - Baseline 12 Leads are necessary to prove Acute Coronary Syndrome

➤ Slide number 16

- Finally, let’s review the significance of a pathological Q wave
- How can you identify it on a 12 lead?
- Key Note:
- If ST elevation is present with the Pathological Q wave, then there is a myocardial infarction in progress.

➢ Slide number 17

- Let’s take what we now know about coronary blood supply and ST segment changes and link them together to locate the MI

➢ Slide number 18 (Page, 2005, Chapter 9)

- We are going to use Bob Page’s method to learn the right way to look at a 12 Lead.
  - ISAL

➢ Slide number 19

- Let’s connect the dots between where ST segment changes are noted to the vessels involved.
- What are the reciprocal leads associated with:
  - Inferior
  - Anterior
  - Lateral
- Why is there no reciprocal leads associated with the Septal?
  - Mirror images are reversed (ST elevation/ ST depression)
  - But the Septal leads are in the middle of the heart. No mirror image is available at the center.

INSTRUCTIONAL NOTE: For the following slides 20 – 26 we want the providers to practice the correct method (steps) in reading a 12 lead. To make this effective, the facilitator should ask for the participants to always start with the initial steps learned and build through each step consecutively with each slide until the entire ECG has been read in the appropriate order. In other words, by the time the facilitator has progressed to slide 26, the students should walk through reading inferior leads first, septal second, anterior third, and lateral leads last.
Let’s look at the progression in reading a 12 Lead – Step 1: Inferior

- What vessel is involved?
- What section of the heart is affected?
- How may this affect our treatment?

Where do we start reading?

What do you see?

Is there reciprocal changes? (in the mirror)

How may this affect our treatment?

Step 2: Septal

- What vessel is involved?
- What section of the heart is affected?
- What physiological changes could we see in our patient’s presentation?

Step 3: Anterior

- What vessel is involved?
- What section of the heart is affected?
- Why is the Septal and Anterior often connected?

Where do we start reading?

What do you see?

Is there reciprocal changes? (in the mirror)
- What physiological changes could we see in our patient’s presentation?

- Step 4: Lateral
  - What vessel is involved?
  - What section of the heart is affected?
  - What physiological changes could we see in our patient’s presentation?

- Where do we start reading?
  - What do you see?
  - Is there reciprocal changes? (in the mirror)
  - What physiological changes could we see in our patient’s presentation?

- This is the point where the “12 Lead ECG – ISAL Practice Worksheets” should be handed out to the participants.

INSTRUCTIONAL NOTE: Directions for “12 Lead ECG – ISAL Practice Worksheets” This worksheet is designed to re-address the participants ability to identify ST segment changes appropriately and then apply those changes in the identification of the vessel involved with correct the correct technique to reading 12 leads.

MATERIALS FOR THIS PROJECT:

- Colored pencils
- Page, R. (2005). 12-lead ECG for acute and critical care providers. (Chapter 9)

DIRECTIONS TO THE STUDENT: Ask the students to break into groups of 2. Once everyone is settled into position ask each participant to work on page one of the worksheet in their groups. Providers will find the ST segment and color in the area to the isoelectric line. Then the learner should write in beneath the picture if the representation is that of elevation or depression. It may be necessary for the instructor to draw an example on
the dry erase board and demonstrate how to color in the region for ST elevation/depression. Remind students not to work ahead, but wait for the class to move to the next page together as a group. As the facilitator it will be necessary to walk around the room, observe student progress, and provide guidance when necessary. Once this page has been completed the facilitator will provide the directions for the remainder of the worksheet. It is advisable (but not necessary) to make the teams wait for all members of the class to complete each page before moving to the next. Beginning with the “Inferior” (page 2), ask the students to identify the three leads used in inferior evaluation. When they have answered this correctly, have them choose one specific colored pencil to shade in the three leads on the ECG strip. Ask the students to identify the reciprocal leads for this case and write them in the provided space. Finally, (using the same color pencil) ask the students to identify what vessel being evaluated in the “inferior” leads. Have the students color that vessel/area identified. Keep repeating this process for each page using a different colored pencil for each page. This worksheet is meant to be a document students may keep as reference material and does not need to be collected.

- Slide number 28 – Send students onto the scheduled break (15 minutes)

INSTRUCTIONAL NOTE: Directions for “Project Case Study Analysis – part 1” While students are on break, distribute the Case Study Presentation. Upon their return ask the students to take their case and break into their groups again.

MATERIALS FOR THIS PROJECT:

- Colored pencils
- Classroom Paramedic textbooks as references
- Notebook paper and a pencil

DIRECTIONS TO THE STUDENT: Ask the students to read the case and organize a document that discusses the following:

- Slide number 29 – Case Study Analysis: part 1
- Overview of the patient presentation
- Interpretation of the 12 Lead
- Identify the area of the cardiac system affected
- Describe how that damage may reflect in the patient’s case

Learners may use the resources provided in the classroom (3D heart model, Paramedic reference texts) to aid in the careful description of the pathology and its effects on the case. The facilitator should walk around the room and provide assistance or examples as necessary to keep the groups moving in a forward fashion. The instructor should remain open and flexible based on the overall class presentation, and as necessary remind them of the expectations they created for course.

This section has been given one hour for students to fully complete. At the end of the allotted time, the instructor may need to allow providers the chance to get up and stretch before starting the case discussion.

- Slide number 30 – Case Discussion: part 1

INSTRUCTIONAL NOTE: During the Case Study Discussion, the facilitator should rotate through the groups asking them to reveal their findings on each component noted from Slide Number 29. The facilitator should open a discussion and ask key points based on the responses to guide a debate or clarify points as needed. Additionally, the instructor should allow the groups to engage each other in points for clarification or discussion. It may be valuable for the instructor to write key topics or points on the dry erase board based on the data presented. Once the case has been analyzed in all areas, the groups should be given a break.

- Slide number 31 – Send the students on a break (15 minutes)

INSTRUCTIONAL NOTE: Directions for “Project Case Study Analysis – part 2” While students are on break, distribute the Treatment Worksheet and a sampling of each cardiac medication (per group) available to them if they were on the ambulance. Upon their return ask the students to take their case and return to their groups once more.
MATERIALS FOR THIS PROJECT:

- Colored pencils
- Classroom Paramedic textbooks as references
- Notebook paper and a pencil
- Treatment Worksheet
- 5 (vials/prefills or bags) of the following medications
  - Epinephrine
  - Dopamine
  - Atropine
  - Nitroglycerin
  - Aspirin
  - Morphine
  - Adenosine
  - Procaïnamide
  - Lidocaine
  - Amiodarone
  - Vasopressin
  - Normal Saline

DIRECTIONS TO THE STUDENT: To build upon the case presented before the break, you will justify the medications used to treat the patient based on your understanding of pharmacology and the impact it has on the individual body systems. You may use all your resources to complete this part of the project including any electronic devices/apps that may help you identify Drug Profile components that impact your case. Using the Treatment Worksheet, answer the following:

- Slide number 32 – Case Study Analysis: part 2
  - Table 1: Basic case background
  - Human Body Drawing: can be used (if the student would like) to outline areas as ill/ and treatments rendered.
  - Heart Picture: Circle the area of the heart in the picture that is affected based on 12 Lead ECG presentations.
  - Next to the heart: Provide a thorough run down of all treatments that will be provided in this case.
- Table 2: List the medications, dosages, body system(s) affected and their expected actions.

INSTRUCTIONAL NOTES: As students begin creating treatment choices, there may be a need to adjust documentation based on any conflicting information uncovered during “Part 1 – Case Study Discussion”. Students should be allowed the chance to make any amendments necessary in order to provide the appropriate care. As the groups work through this generative project, the facilitator will continue to walk around and assist or provide clarification to the groups as needed. This section has been given one hour for students to fully complete. At the end of the allotted time, the instructor may need to allow providers the chance to get up and stretch before starting the case discussion.

➤ Slide number 33 – Case Discussion: part 2

INSTRUCTIONAL NOTE: During the Case Study Discussion (part 2), the facilitator should rotate through the groups asking them to reveal their treatment choices and may ask them to justify why certain medications would or would not be used. Again, it may be valuable for the instructor to write key medications or points on the dry erase board based on the data presented. Once the case has been analyzed in all treatment areas, the groups can be dismissed for the day. It is necessary to collect the documentation from each group on the Case Study Analysis (part one & two). After class, the instructor should analyze the data collected in each group for thorough understanding of the physiology and related pathology. The instructor should complete the group assessment rubric to provide feedback to the participants on their efforts. Finally, the instructor needs to review the Pre-Test on ECG interpretation handed out at the beginning of the class for correct and incorrect responses. An overview analysis of items commonly missed can guide the Breakout Session #5 on day two. In addition to the analysis of these items, each individual should be allowed to review their results during this session and ask questions as needed for clarification of areas missed.
Complete Listing of Resources for Topic #2: Justifying Treatment Choices

- Power Point Presentation – 12 Lead ECG Interpretation Part 2
- 12 Lead ECG – ISAL Practice Worksheet
- Colored pencils
- Case Study Presentation
- 3D Heart Model
- Various Paramedic Reference Textbooks
- Treatment Worksheets
- Group Assessment Rubric
- Bob Page Textbook
- 5 (vials/prefills or bags) of the following medications
  - Epinephrine
  - Dopamine
  - Atropine
  - Nitroglycerin
  - Aspirin
  - Morphine
  - Adenosine
  - Procainamide
  - Lidocaine
  - Amiodarone
  - Vasopressin
  - Normal Saline
12 Lead ECG – ISAL Practice Worksheet

ST Segment Identification

Find the ST segment and color it in to the isoelectric line. Is it elevated or depressed?
What are the Reciprocal Leads:
Septal
What are the Reciprocal Leads:
What are the Reciprocal Leads:

Student References: Appropriate Lead Placement
Reference: 12 Lead Analysis

- Is ST elevation present?
- Is there reciprocal changes?
- Is the patient on medication that can cause changes in the 12 Lead?
- Is there ST depression or T wave inversion?
- Are pathological Q waves present?

<table>
<thead>
<tr>
<th>STEMI</th>
<th>Vessel</th>
<th>Leads</th>
<th>Reciprocal Leads</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Inferior</td>
<td>RCA</td>
<td>II, III, aVF</td>
<td>I, aVL</td>
</tr>
<tr>
<td>S Septal</td>
<td>LAD</td>
<td>V1, V2</td>
<td></td>
</tr>
<tr>
<td>A Anterior</td>
<td>LAD</td>
<td>V3, V4</td>
<td>II, III, aVF</td>
</tr>
<tr>
<td>L Lateral</td>
<td>Circumflex</td>
<td>V5, V6, I, aVL</td>
<td>II, III, aVF</td>
</tr>
</tbody>
</table>
CASE STUDY

You respond to a community hospital’s ER department for a transfer to a tertiary facility that has a higher level of care. The ER staff tells you that they really do not know what is going on with the patient and have decided to transfer them.

When you ask for the packet of information on the patient they are more than happy to give it to you and ask that you please hurry.

Your general impression of the patient when you walk into the room is an obese 36 year old male that is unconscious and is unresponsive to verbal or painful stimuli. The patient has normoactive bowel sounds, Lung sounds are clear and equal bilateral, patient’s respirations are hyperpneic, and S1 and S2 are present but appear to be diminished slightly. No additional heart sounds or murmurs, no bruits present.

Paperwork states that he was brought in via EMS. Family reports that he had been weak and not eating before he passed out. Additionally, he was confused and had vomited prior to passing out. He presented to the ER diaphoretic and unconscious, hypotensive and tachycardic.

Present vital signs are as follows:
HR – 88
RR – 32, deep and labored and irregular
SPO2 – 92% RA
B/P – 74/58

As you look through the paperwork you notice the lab work and the most recent results are as follows:

**URINALYSIS**

Color - yellow
pH – 6.92
Blood – 3+
Ketones – 3+
Glucose – 4+

**CBC**

RBC – 3.3M
WBC – 13.1M
Platelets – 300,000

**CHEMISTRY**

Na – 149
K – 8.5
Cl – 102
Ca – 5.6
GFR – 43
BNP – 68
CK MM – 698
Troponin – 0.01
INR – 4.2
**ABG**
pH – 7.03
CO2 – 28
HCO3 – 14
PO2 – 78
The 12 lead that is in the packet looks like this:
<table>
<thead>
<tr>
<th>Patient:</th>
<th>Signs/Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitals:</td>
<td>HR -</td>
</tr>
<tr>
<td></td>
<td>RR -</td>
</tr>
<tr>
<td></td>
<td>BP -</td>
</tr>
<tr>
<td></td>
<td>SpO2 -</td>
</tr>
<tr>
<td></td>
<td>GCS:</td>
</tr>
<tr>
<td>History:</td>
<td></td>
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</tbody>
</table>

| Treatment: |

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>DOSAGE</th>
<th>BODY SYSTEM/MECHANISM OF ACTION</th>
</tr>
</thead>
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</table>
## Rubric for Group Project – Assessment 2:2a-b

<table>
<thead>
<tr>
<th></th>
<th>Very Good</th>
<th>Good</th>
<th>Developing</th>
<th>Score:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research &amp; Collecting Data</strong></td>
<td>Collected lots of information from various places, such as books, the internet, etc.</td>
<td>Collected some information from a few places</td>
<td>Collected a little information from a few places</td>
<td></td>
</tr>
<tr>
<td><strong>Sharing</strong></td>
<td>Always shared information or ideas with all team members</td>
<td>Sometimes shared information or ideas with team members</td>
<td>Shared little information or ideas with team members</td>
<td></td>
</tr>
<tr>
<td><strong>Contribution</strong></td>
<td>Always helped every team member with all tasks, such as gathering information, editing work</td>
<td>Helped some of the team members, but not all to gather information and edit work</td>
<td>Didn’t help team mates to gather information, edit work, etc.</td>
<td></td>
</tr>
<tr>
<td><strong>Listening to other group members</strong></td>
<td>Always listened to the ideas and suggestions from the team</td>
<td>Sometimes listened to ideas and suggestions from the team</td>
<td>Didn’t listen to other team members. Often did things his/her own way.</td>
<td></td>
</tr>
<tr>
<td><strong>Co-operating with the team</strong></td>
<td>Never argued with team members. Always talked about ideas and got everyone’s opinion</td>
<td>Sometimes argued with the team. Sometimes talked about ideas and thoughts about some opinions</td>
<td>Often argued with team mates. Never listened to their ideas and didn’t think about their opinions</td>
<td></td>
</tr>
<tr>
<td><strong>ECG Interpretation</strong></td>
<td>Accurate interpretation including all advanced criteria</td>
<td>Accurate interpretation of ST segment changes with some advanced criteria included</td>
<td>Imprecise interpretation of basic 12 Leads with no advanced criteria included</td>
<td></td>
</tr>
<tr>
<td><strong>Corresponding area of the heart impacted</strong></td>
<td>Accurate identification of the cardiac &amp; coronary vessel occlusions with detailed descriptions of the effects on physiology</td>
<td>Accurate identification of the cardiac &amp; coronary vessel occlusions with some description of the effects on physiology</td>
<td>Imprecise identification of the cardiac &amp; coronary vessel occlusions with no description included on the effects of physiology</td>
<td></td>
</tr>
<tr>
<td><strong>Treatment Modalities</strong></td>
<td>Accurate treatment options identified with detailed descriptions of the medications, dosages, pharmacological actions/body systems affected</td>
<td>Accurate treatment options identified with some description of the medication, dosage, pharmacological actions/body systems affected</td>
<td>Incomplete treatment options identified with no description of the medication, dosage, pharmacological actions/body systems affected</td>
<td></td>
</tr>
</tbody>
</table>

Total Score Possible: ____
Total Score Achieved: ____
Percentage: ____
Instructional Method – Topic #3: Implementing Treatment Choices

Topic Description:

These breakout sessions allow participants to apply the skills and training learned during Topic #1 & 2 of Day 1 in simulated patient encounters, exploring critical thinking skills in a practical setting. To enhance learning transfer, students will join in a Post-Simulation Debriefing with Video Analysis and Individual Reflection Reports. The 5th breakout session will offer the EMS providers a chance to review the results of their ECG Interpretation Pre-Test. Finally, the 6th station will incorporate rote skill review and impromptu discussion with faculty on any areas of deficiency or questions brought up as a result of the course.

Estimated Time of Topic Delivery – 8 hours

INSTRUCTIONAL NOTE: You will need to ensure that the breakout rooms are set up with the necessary equipment before the expected start time of the course (the time frame required for this to occur will vary based on institutional resources.) It will also be necessary to meet with the additional faculty members involved in the breakout sessions prior to the start of the course (This should not take long unless the facilitators are new to the course. If members are new, it will be necessary to explain all expectations for their station as well as the method to effectively evaluate and debrief participants. If possible, new faculty should be paired with seasoned faculty that are well versed in simulation and debriefing sessions to improve the experience for everyone involved.) Confirm that each facilitator understands his/her roles and assigned station. Then, facilitators should be given adequate time (approximately 20 minutes) to check their station for appropriate equipment and collect any missing items prior to student arrival. You should ask all facilitators to return to the primary classroom so that they can be introduced to the participants at the beginning of the course.

Introduction to Day 2 – 20 minutes.
Several things need to take place during the first 20 minutes. First, welcome learners to Day 2, and introduce all of the facilitators involved. Outline to the participants where breakout sessions are located and which faculty will be present. Pass out both the Simulation Center Rules and Regulations as well as the Confidentiality Agreement and Consent to Video.

MATERIALS NEEDED FOR THE INTRODUCTION:

- Simulation Center Rules and Regulations Form
- Simulation Center Confidentiality and Consent to Video Form

DIRECTIONS TO THE STUDENT: Take a few minutes and explain the rules of the simulation center. Allow participants time to read and ask questions for clarification. If and when they are satisfied with their review, please have them sign the confidentiality and consent form.

INSTRUCTIONAL NOTE: These forms should be collected prior to learners moving into the breakout sessions. Facilitators should prepare the learners for the breakout sessions by introducing the faculty members that will be helping in the day’s events. It will be necessary to break participants up into 5 groups of 2 in each group. The decision to navigate the division should be based on the overall behaviors of the class members and the instructor’s understanding of classroom dynamics.

DIRECTIONS TO THE STUDENT: Ask learners to review the timeline of events for today’s class session. Make sure they know the location of each breakout station, and what order their group will proceed through each of them. Please remind participants to keep an eye on the clock so that the sessions will move seamlessly based on the anticipated timeline.

INSTRUCTIONAL NOTE: Once all questions have been answered, each team should go with the facilitators to their assigned station.

The following sections will provide an overview of the goals for each breakout session. A complete listing of resources for Topic #3: Implementing Treatment Choices will follow this instructional methods section.
BREAKOUT SESSION #1 & #3: Simulation Testing Stations

*Estimated Time of Station Introduction* – 20 minutes

Using the included Scenario entitled “Simulation Testing Station -1 & 2”, the facilitators should provide an overview of the equipment and manikin specifications. Answer any questions regarding expectations and allow students an opportunity to become familiar with the equipment and manikin features. Each station should have two facilitators assigned to it, and if live patients are necessary, then one of the facilitators may function as the patient while the remaining evaluator can provide the needed information within the scenario to the team leader. Finally, verify that video recording equipment is prepared and working appropriately prior to the start of the script.

**INSTRUCTIONAL NOTE:** If live patients are utilized then it is necessary to maintain the integrity of the event by using items such as IV skin attached to the patient’s arm with the expected drainage tubes to improve transferability into genuine encounters. Moulage should be applied to the simulated patient based on the expected signs for the specified Simulation Testing Station.

**EQUIPMENT NEEDED FOR THE SIMULATION STATIONS:**

- Electrodes
- First Out Bag (fully stocked)
- Medication Bag (fully stocked)
- Airway Bag (fully stocked)
- 2 High Fidelity Simulation Manikins
- Video Camera system
- 12 Lead ECG Monitor
- 12 Lead cables
- Pacing/Defibrillating cables
- 5 additional instructors for breakout sessions on Day 2 only
- Oxygen tank with regulator
- Stretcher
- Printed Simulation Scenarios
  - CHF leading into Cardiogenic Shock
  - Chest Pain
DIRECTIONS TO THE STUDENT: Encourage the team leaders to use all equipment as expected in the event of an actual emergency, and to expect medication responses in “real time.” Ask the learners to view the equipment and ask any clarifying questions needed. “As the evaluator, I will interact with you as the family and/or bystanders when necessary. I will answer any questions that are appropriate for assessment findings, but will not provide you any additional assistance regarding your treatment and transport choices. When you are ready, the scenario will begin.”

Estimated Time of Scenario Delivery – 20 minutes

Estimated Time for Scenario Reset – 20 minutes

INSTRUCTIONAL NOTE: Thank the participants for their efforts shown in the scenario, and send the learners to the Video Analysis & Student Experience Station. Reset the station to the condition in which it was found.

BREAKOUT SESSION #2 & #4: Video Analysis & Student Experience Stations

INSTRUCTIONAL NOTE: Evaluators assigned to the Video Analysis Station should actively listen and watch the simulation as it occurs. Upon completion, and while awaiting the arrival of the participants, both evaluators MUST complete an “Instructor Simulation Assessment Report.” Notes can be included or documented in the open spaces under each section of the form to help guide assessment decisions.

Using the information on the back of the “Post-Simulation Debriefing: Video Analysis & Student Experience” form, please introduce yourselves and remind the participants that the debriefing is a casual critique to provide therapeutic feedback on individual performance and is not intended to demean. The “Guiding Questions” should be used as a starting point to guide the review, allowing for students to elaborate on areas as necessary to evoke critical thinking and problem solving. Initiating the video during the critique could help reveal or clarify areas of concern and can be utilized to reinforce both positive performance as well as areas of deficiency.

MATERIALS NEEDED FOR THE VIDEO ANALYSIS & STUDENT EXPERIENCE STATION:

- Student Simulation Experience Form
• Instructor Simulation Assessment Report
• Video Access to Simulation Stations
• Instructional Debriefing Form

DIRECTIONS TO THE STUDENT: When the discussion comes to a close, ask the learners to sit down and critically reflect on the simulation and respond to the questions found on the “Student Simulation Experience Report.” Instructors should briefly review the responses on the forms to verify learning transference then return the forms to the individual for their personal records on the event.

BREAKOUT SESSION #5: ECG Interpretation Pre-Test Review Station

During this station, learners should be allowed to review their assessment results with direct oversight from the facilitator. It is necessary, based on student results, to break down the ECG’s through a collaborative analysis between the facilitator and the learner. Reflection questions that can be used once the review is complete can include: “Do you feel that the ECG was easier to interpret in the simulation after finishing Day 1 of the course?” “Can you identify the area of the heart involved, and would that impact your treatment choices if this was an actual encounter?”

MATERIALS NEEDED FOR THE ECG INTERPRETATION PRE-TEST STATION:

• Individual results from the ECG Interpretation Pre-Test Station
• ECG Practice Worksheets
• Variety of Paramedic Textbooks as Reference Material
• Colored Pencils
• Pencils
• Enlarged 3D Heart Model
• Torso Manikin

BREAKOUT SESSION #6: Misc. Rote Skill Practice & Discussion Station

INSTRUCTIONAL NOTE: This station should be led by a more seasoned facilitator that can be prepared to work “off the cuff” and respond to the specified needs of the group. The faculty member should use a “coming to presence” activity such as their own personal experience with 12 Lead ECG’s or collective question that asks
learners to reflect on the Day 1 activities such as “What areas did you like the least?” and develop those reactions into a facilitated discussion for improvement. The faculty should have access to a whiteboard or drawing board where these topics can be viewed and referred to as the session advances. Materials, resources, and equipment utilized in Day 1 should be available for the instructor to access as a means to cultivate the discussion and uncover areas in need of reinforcement. Facilitators should also allow participants to voice their concerns or questions regarding the simulation testing. Armed with the information attained from the discussions, the instructors should establish small groups based on those areas of primary concern and allow the learners to practice these rote skills (for example: patient assessment, right-sided ECG placement, or a review of the physiology linked to specified treatment or medication choices).

As the session begins to wrap up, the faculty should ask questions to determine the willingness of the participants to use the experiences within the program towards their continued practice in the field as EMS professionals.

MATERIALS NEEDED FOR THE MISC. ROTE SKILL PRACTICE & DISCUSSION STATION:

- Student Simulation Experience Reflections from the Report
- ECG Practice Worksheets
- Variety of Paramedic Textbooks as Reference Material
- Torso Manikin
- Electrodes

WRAP-UP SESSION & COURSE EVALUATION

While the additional faculty are cleaning up their stations and returning equipment to its proper location, the primary instructor can meet with the students and thank them for their participation and remind them that their course completion records will be updated in the WV OEMS electronic CIS system within the next 72 hours. Provide students with an overview of the events, and ask them to provide you with information on their experiences with the facilitators and individual stations. As the discussion comes to a close, provide the learners with the Post Course Survey Form and exit classroom after you have provided the instructions below.
MATERIALS NEEDED FOR THE WRAP UP SESSION:

- Post Course Survey Form
- Document Envelope

DIRECTIONS TO THE STUDENT: Please take a few minutes to carefully review the questions listed on the survey, and elect one classmate to collect the responses and place them inside the provided envelope. Once you have completed the survey, you are free to leave. “Thank you again for your participation in the 12 Lead ECG Continuing Education Course, and we look forward to following up with you in a few months regarding your post-course experiences.”
Complete Listing of Resources for Topic #3: Implementing Treatment Choices

- Various Paramedic Reference Textbooks
- 12 Lead Interpretation Pre-Test Results
- ECG Practice Worksheets
- Simulation Center Rules and Regulations
- Simulation Center Confidentiality Agreement
- Bob Page Textbook
- Variety of Paramedic Textbooks as Reference Material
- Colored Pencils
- Pencils
- Enlarged 3D Heart Model
- Torso Manikin
- Electrodes
- First Out Bag (fully stocked)
- Medication Bag (fully stocked)
- Airway Bag (fully stocked)
- 2 High Fidelity Simulation Manikins
- Video Camera system
- 12 Lead ECG Monitor
- 12 Lead cables
- Pacing/Defibrillating cables
- 5 additional instructors for breakout sessions on Day 2 only
- Oxygen tank with regulator
- Stretcher
- Printed Simulation Scenarios
  - CHF leading into Cardiogenic Shock
  - Chest Pain
- Student Simulation Experience Report
- Post Course Survey Form
- Instructional Debriefing Form
- Instructional Simulation Assessment Report
- Course Evaluation Form
Simulation Center

Rules and Regulations

1. No food or drinks in the Simulation Center.
2. Students are not allowed in the Simulation Center without the direct supervision of a faculty member.
3. Supplies used in the simulation are to remain in the Simulation Center.
4. Remember that the confidentiality statement and Code of Ethics applies at all times in the Simulation Center.
5. Safety of all participants must be ensured as the simulator can initiate electrical therapy. ACLS guidelines for the use and safety of these interventions must be followed.
6. Learners will wash their hands to remove stains, ink, or oils prior to the simulation experience.
7. Standard precautions will be followed and adhered to during the simulation experience as is expected in the clinical environment.
8. Once the simulation experience is completed, learners must restore the simulator and environment to the baseline status.
9. To maximize learning opportunities during the simulation, conversation and discussions will be limited to the scenario itself.
10. After a learning experience, participants should not share details and activities with individuals who have not participated in the learning experience.
11. Learners who are assessed by the facilitators during simulation exercises and determined to need additional practice or remediation for a skill or concept will be referred to the skill lab for follow up.
12. Consent to photograph and video tape will be obtained from all learners.
13. Anyone ignoring the rules of the Simulation Center will be dismissed.
Simulation Center

Confidentiality Agreement and Consent to Video

During your participation in a simulated patient encounter (SPE) at the Simulation Center, you will function as both team leader in simulated scenarios and a team member.

The objective of the SPE program is to provide the learner with an opportunity to formulate and implement a strategy to treat a patient experiencing a cardiovascular complaint by accurately integrating the findings from a 12 Lead ECG while anticipating and treating life-threatening complications associated with cardiovascular pathology in a challenging, but controlled setting.

By signing this agreement, you agree to maintain strict confidentiality regarding both yours and others performance, whether seen in real time, on video or otherwise communicated to you. Failure to maintain confidentiality may result in unwarranted and unfair defamation of character of the participants.

You will be discussing the scenarios during debriefing, but we believe that “all that takes place in the simulation environment – stays in the simulation environment!” To maintain optimal simulation experiences for the other learners who will be following you in the center, you are to maintain strict confidentiality regarding the specific scenarios, as well as what happened during the simulation experience. A breach of confidentiality may result in loss of privileges and dismissal from the course.

I agree to maintain strict confidentiality about the details of the scenarios, participants, and performance of any participant(s).

I authorize the Simulation Center staff to video record my performance during clinical simulation experience.

I authorize the Simulation Center staff to use the video recording(s) for purposes including, but not limited to: debriefing, faculty review, educational, research, public relations, advertisement, promotional, and/or fund raising activities.

_________________________________________    ________________________________________
Student Name:                                          Signature:

_________________________
Today’s Date:
Instructions for the Affective Evaluations of 12 Lead ECG Simulation Testing

There are two primary purposes of an affective evaluation system:

1. To verify competence in the affective (behavioral) domain, and
2. To serve as a method to change behavior.

In this assessment, we are attempting to verify that the student is prepared to care for patients suffering from cardiovascular events with accuracy in 12 Lead ECG interpretation and that there are no areas in which remediation of knowledge, skills, or behavior is needed.

The nature of this evaluation makes it impossible to achieve complete objectivity, but these forms attempt to decrease the subjectivity and document affective evaluations. Additionally, there should be a minimum of two evaluators at each scenario station to allow for a more unbiased cut score to be reached.

If it is determined that a student is not meeting the expected standard, then remediation may be necessary. It is important then that you carefully document any areas of deficiency on the form to add to the validity of the remediation.

DIRECTIONS FOR USE OF THIS FORM:

1. Clearly print your name in the evaluator slot
2. Clearly print the name of the student being evaluated as “Team Leader” of the scenario
3. Briefly list either the scenario station number being used, or describe the scenario
4. Award only one numerical point score for each category (i.e.: scene management, patient assessment, patient management, interpersonal relations, integration, integrity and empathy, self-motivation and self-confidence, teamwork diplomacy and respect, and finally patient advocacy.)
5. If you feel that the student did not score a minimum of a “2” in any category, please document your findings on the form.

DIRECTIONS FOR RUNNING A SIMULATION TESTING STATION:

1. Make the scenario as close to “real” as possible by utilizing one evaluator as the patient for the medical call, using rhythm generators (as appropriate), IF a high fidelity simulation manikin is not available.
2. Do not guide the student’s decision on patient care encounters. Let them make mistakes, and then create changes in the patient encounter as necessary. (In other words, if a student gives the wrong medication to a patient, then make sure that the patient’s health status changes in relation to the error made)
3. This is NOT an attempt to embarrass any one student, so proper decorum is needed; however, during the post call critique, you should be honest and sincere with that student regardless of your fear in making them “feel bad”.
4. Finally, you will be evaluating ONLY the team leader and how they function on the individual scenarios. Be prepared to see individuals struggle on the first couple of simulations, but as they progress through the day, you should expect to see dramatic improvements.
### Instructor Simulation Assessment Report:

#### 12 Lead Simulation Testing Station:

<table>
<thead>
<tr>
<th>Student Name:</th>
<th>Date:</th>
<th>Course:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Simulation Description: | |
|-------------------------||
| Simulation #: | |

<table>
<thead>
<tr>
<th>Scene Management</th>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thoroughly assessed and took deliberate actions to control the scene</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Assessed the scene, identified potential hazards, did not put anyone in danger</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Incompletely assessed or managed the scene</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Did not assess or manage the scene</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Critical Concern Notes:

<table>
<thead>
<tr>
<th>Patient Assessment</th>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed an organized assessment and integrated findings to expand further assessment</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Completed initial, focused, and ongoing assessments</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Performed an incomplete or disorganized assessment</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Did not complete an initial assessment</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Critical Concern Notes:

<table>
<thead>
<tr>
<th>Patient Management</th>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managed all aspects of the patient’s condition and anticipated further needs</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Appropriately managed the patient’s presenting condition</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Performed an incomplete or disorganized management</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Did not manage life-threatening conditions</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Critical Concern Notes:

<table>
<thead>
<tr>
<th>Interpersonal relations</th>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established rapport and interacted in an organized therapeutic manner</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Interacted and responded appropriately with patient, crew, and bystanders</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Used inappropriate communication techniques</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Demonstrated intolerance for patient, bystander, and crew</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Critical Concern Notes:
### Integration (verbal report, field impression, and transport decision)

<table>
<thead>
<tr>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stated correct field impression and pathophysiological basis provided succinct and accurate verbal report including social/psychological concerns, and considered alternate transport destinations</td>
<td>4</td>
</tr>
<tr>
<td>Stated correct field impression, provided succinct and accurate verbal report, and appropriately stated transport decision</td>
<td>3</td>
</tr>
<tr>
<td>Stated correct field impression, provided inappropriate verbal report or transport decision</td>
<td>2</td>
</tr>
<tr>
<td>Stated incorrect field impression or did not provide verbal report</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Critical Concern Notes:

### Integrity and Empathy

<table>
<thead>
<tr>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistently honest, shows compassion for others, completely supportive and reassuring to those in need</td>
<td>4</td>
</tr>
<tr>
<td>Honest in most aspects, shows concern, and somewhat helpful demeanor toward those in need</td>
<td>3</td>
</tr>
<tr>
<td>Loses trust during patient encounter, does not respond appropriately to the emotional responses of others</td>
<td>2</td>
</tr>
<tr>
<td>Is not honest during patient encounter, is completely unconcerned about the needs of others</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Critical Concern Notes:

### Self Motivation and Self Confidence

<table>
<thead>
<tr>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takes complete initiative to finish assignments, does not need to be constantly supervised, trusts own judgment, demonstrates awareness of strengths and limitations</td>
<td>4</td>
</tr>
<tr>
<td>Finishes assignments with minimal supervision, demonstrates some trust in personal judgment,</td>
<td>3</td>
</tr>
<tr>
<td>Does not complete assignments in a timely manner, needs frequent supervision with little trust in personal judgment</td>
<td>2</td>
</tr>
<tr>
<td>Does not take any initiative and relies on others to take the lead, is not aware of personal strengths and limitations</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Critical Concern Notes:
<table>
<thead>
<tr>
<th>Teamwork, Diplomacy, and Respect</th>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Places the success of the team above self-interest, supports team members, shows respect for all team members, remains flexible and open to change, talks with others to resolve problems</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Supports the team, works well with all members, remains flexible to change</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Shows little team playing interest, has own goals and self in mind. Shows little respect for other team members, and is resistant to change</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Completely undermines the team, is not supportive, shows no respect, will not communicate to resolve problems, uses derogatory and demeaning terms in relation to the profession, patient, and situation</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Critical Concern Notes:**

<table>
<thead>
<tr>
<th>Patient Advocacy</th>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not allow any personal bias to interfere with patient care, places needs of patient above self-interest, protects and respects patient confidentiality and dignity</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Cares for the patient appropriately and respects their dignity and confidentiality</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Allows some personal bias to interfere with patient care without endangering the patient’s life, shows minimal respect for patient dignity and confidentiality</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Allow personal bias to affect patient care and endangers aspects of patient care, shows complete disregard for patient cares more for self-interests, has no respect for patient confidentiality and dignity</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Critical Concerns Notes:**

**Post-Simulation Debriefing: Video Analysis & Student Experience**
Faculty Introduction:

- Ensure confidentiality to promote a safe environment for discussion.
- Utilizing the video documentation, allow individuals to react to the simulation, and talk though their thoughts and emotions.
- Analyze what happened using the students as the cue for discussion topics. Follow up with any remaining points mentioned on the evaluation documents.
- Always review what went wrong, but also highlight and praise areas that were done well.

Guiding Questions:

- Now that the simulation is over, what was your experience like?
- What was your differential diagnosis?
- Were you able to identify the 12 lead without difficulty?
- What area of the heart was involved?
- Can you justify your treatment plan based on your findings?
- What do you think worked well?
- What do you think you can improve on?
- Analyze the time frames and steps taken for interventions. Were there any issues noted?
- Were you able to anticipate and be prepared for any changes to the patient’s status?
- If you could run the call again, what changes would you make?
- Did you meet the emotional needs of the patient and/or family members present?
- What are your final thoughts?
Student Simulation Experience Report:

12 Lead Simulation Testing Station:

1. **Scenario Synopsis** (general overview... what was the call? How many patients?, etc.):

2. **Possible Diagnosis**: (list all of the things that could possibly be wrong with the patient):

3. **Differential Diagnosis**: (What you have determined to be wrong with the PT):

4. **Treatment**: (What treatment did you give):

5. **Outcome**: (What was the outcome of the treatment and scenario as a whole):

6. **Procedural Adjustments**: (What would you do differently if you were faced with this or a similar call in the future):
Provide the following information as the Team Leader requests it:

If High Fidelity Simulation Manikin is not available, One of the evaluators should respond as though they are the patient and the Team Leader is conversing with them in that manner. Please make sure to prepare the team leader on expectations regarding interactions and appropriate care. In some cases it may be necessary to have the team leader review the normal findings expected in this electronic manikin (ie: blood pressure, pulse locations, flash back, pupil responses, lung sounds, expected electrical therapy, etc.)

### Scenario:
You have been called to the home of a 67 year old male who is complaining of tightness in his chest.

### Patient Details:
- **Name:** Samuel Smith
- **Height:** 5’7”
- **Weight:** 220 pounds
- **Smoking:** 2 pack/day smoker
- **LOC:** Alert
- **CC:** Chest tightness
- **Airway & Breathing:** Open, poor air exchange noted
- **Circulation:** Pulses strong and present
- **O:** 30 minutes ago
- **P:** Nothing
- **Q:** tightness
- **R:** none
- **S:** 7
- **T:** Constant since it began
- **Jugular veins:** Distended at 45 degree angle
- **Chest Exam:** Nothing noted
- **Breath sounds:** Bibasilar crackles

### Interventions prior to EMS arrival:
- Took 3 Nitroglycerin prior to EMS arrival without any relief

### Vital Signs:
- **Oxygen Saturation:** 92%
- **BP:** 122/64
- **Pulse:** 67
- **RR:** 26
- **EKG:** Sinus Rhythm with a 1st degree heart block (12 Lead STEMI noted in Inferior leads)
- **S/S:** Pedal pitting edema to the lower extremities noted

### Allergies:
- Penicillin and Sulfa drugs

### Medications:
- “I take them only when I remember to”
- Nitroglycerin (as needed), furosemide, and captopril. – Noncompliant x3weeks

### Pertinent Past Hx:
- Angina, Congestive heart failure, Hypertension

### Last oral:
- “At breakfast, about 4 hours ago”

### Events leading to Illness:
- “I was watching television when the tightness in my chest began, but the last few nights I have been sleeping on a lot of pillows to prop me up because I get short of breath if I lay flat”

### Secondary Assessment Findings:
- Chest pain increases without relief and blood pressure drops, ECG moves into 2nd degree type 1 heart block with a heart rate of less than 60. Ongoing assessment with appropriate vasopressor treatment and pacing will stabilize the patient, if treatment is not provided within 5 minutes, then the patient should continue to spiral into arrest.
<table>
<thead>
<tr>
<th>Scenario Answers:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Management:</strong></td>
<td>Initiates primary survey, oxygen and ECG monitoring with 12 Lead interpretation, obtains a history and establishes Intravenous Access.</td>
</tr>
<tr>
<td><strong>Secondary Management:</strong></td>
<td>Performs focused assessment, and reassessment throughout the encounter. Manage and protect the airway</td>
</tr>
<tr>
<td><strong>Field Impression:</strong></td>
<td>Exacerbation of CHF leading to a depletion in oxygenation to the cardiac muscle, ultimately ending in Cardiogenic Shock</td>
</tr>
</tbody>
</table>
| **Specific Treatment Required:** | - General treatment protocol with MONA  
- Vasopressor infusion initiated as blood pressure begins to fall  
- Consider pacing                                                                                                           |
Provide the following information as the Team Leader requests it:

If High Fidelity Simulation Manikin is not available, One of the evaluators should respond as though they are the patient and the Team Leader is conversing with them in that manner. Please make sure to prepare the team leader on expectations regarding interactions and appropriate care. In some cases it may be necessary to have the team leader review the normal findings expected in this electronic manikin (ie: blood pressure, pulse locations, flash back, pupil responses, lung sounds, expected electrical therapy, etc.)

Scenario: At 2:35 PM you are dispatched to an office building for a 49 year old male patient with chest pressure. Your response time to the scene is 7 minutes. Upon arriving at the scene, you are greeted at the front door of the office building by a female coworker.

Patient Details: As she is escorting you to the patient, she tells you that Mr. Querrey took his heart medicine, but is still in a lot of pain. The patient is sitting in a chair in the front lobby of the office building. He has a fearful look, is clenching his fist against his chest, and is noticeably diaphoretic.

LOC: Conscious and alert to person, place, and time

CC: “I’m having a lot of pressure in my chest, and I’m sick to my stomach.”

Airway & Breathing: Airway is patent; respirations are normal

Circulation: Radial pulse is normal—strong and regular; skin is pale, cool, and diaphoretic

O: “The pain began suddenly.”

P: “No matter what I do, this pain will not stop!”

Q: “It’s pressure, not really pain.”

R: “The pain stays in my chest”

S: “7”

T: “This started about an hour ago.”

Jugular veins: Normal

Chest Exam: No obvious trauma, chest wall moves symmetrically

Breath sounds: Clear and equal bilaterally

Interventions prior to EMS arrival: “I’ve had 3 sprays of my NTG.”

Oxygen Saturation: 98%

BP: 134/84 mmHg

Pulse: 74 beats/min strong and regular

RR: 18 breaths per minute and unlabored

EKG: Lead II: Sinus Rhythm with positive Q waves and ST segment elevation
12 Lead: Inferiolateral wall myocardial infarction... ST elevation in II, III, and aVF, as well as V4 and V6

S/S: Chest pressure, diaphoresis, and nausea

Allergies: Codeine and penicillin

Medications: Atenolol, NTG

Pertinent Past Hx: Hypertension and angina pectoris

Last oral: “I had a sandwich and coffee 2 hours ago.”

Events leading to Illness: “I was sitting at my desk working on a manuscript when the pain began.”
<table>
<thead>
<tr>
<th>Secondary Assessment Findings:</th>
<th>Pain decreases with proper treatment and patient maintains stabilization throughout the transport; however, if the care is not initiated within 5 minutes of the assessment, then the patient should deteriorate appropriately.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Answers:</td>
<td></td>
</tr>
<tr>
<td>Initial Management:</td>
<td>Initiates primary survey, oxygen and ECG monitoring with 12 Lead interpretation, obtains a history and establishes Intravenous Access. 100% oxygen via NRB mask Aspirin 160-325 mg PO</td>
</tr>
<tr>
<td>Secondary Management:</td>
<td>Performs focused assessment, and reassessment throughout the encounter. Manage and protect the airway</td>
</tr>
<tr>
<td>Field Impression:</td>
<td>Acute Coronary Syndrome</td>
</tr>
</tbody>
</table>
| Specific Treatment Required:  | • Narcotic analgesic/vasodilator: Morphine 2-4mg over 1-5 min. repeated q 5-30 minutes PRN to a max of 10mg.  
• Vasodilator: NTG as long as the BP is sustained |
Post-Course Survey:
While the faculty are absent from the classroom, please take a few minutes to provide me with your perspective on the topics covered during this CE course. Your responses will provide guidance towards areas of the experience that need revision for future classes. If you respond with “Still Uncomfortable,” “Disagree,” or “Strongly Disagree” to any question below, please provide an explanation on the back of the form to help faculty identify the reasons for your dissatisfaction. Please elect one individual from the group to collect all responses and place them in an envelope for pickup in the class basket. Thank you for your participation!

1. Now that you have completed the continuing education on 12 Lead ECG Interpretation, please rate your confidence with the following skills:

<table>
<thead>
<tr>
<th>Skill</th>
<th>“Still Uncomfortable”</th>
<th>“Comfortable”</th>
<th>“Confident”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic 3 Lead ECG</td>
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<tr>
<td>Basic 12 Lead ECG (ST segment changes only)</td>
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<tr>
<td>Expanded 12 Lead ECG Interpretation (including physiology for involved tissues)</td>
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<tr>
<td>Expert 12 Lead ECG Interpretation (physiology as well as advanced placement ie: posterior wall evaluation)</td>
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</tbody>
</table>

2. After completing this course I am more confident in recognizing:

<table>
<thead>
<tr>
<th>Skill</th>
<th>“Still Uncomfortable”</th>
<th>“Comfortable”</th>
<th>“Confident”</th>
</tr>
</thead>
<tbody>
<tr>
<td>The basic components of an electrical impulse (complex)</td>
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<tr>
<td>ST segment changes in a 12 Lead</td>
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<tr>
<td>And identifying the affected leads with the corresponding cardiac physiology</td>
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<tr>
<td>Hemi-blocks and the corresponding pathophysiology</td>
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<tr>
<td>Ventricular Tachycardia</td>
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<tr>
<td>Bundle Branch Blocks</td>
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<tr>
<td>Ventricular Hypertrophy</td>
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</tbody>
</table>

3. Based on your experience in this course, please provide information on the following:
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The instructor was knowledgeable.</td>
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<tr>
<td>The instructor presented the material in a method that was easy to understand.</td>
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<tr>
<td>The environment was conducive to learning</td>
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<tr>
<td>The material/equipment met the needs of the course</td>
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<tr>
<td>The course met my needs as an ALS provider.</td>
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<tr>
<td>The breakout sessions provided me with adequate opportunities to gain confidence in patient care</td>
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<tr>
<td>The breakout session faculty were effective in simulation delivery</td>
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<tr>
<td>The breakout session faculty were effective in simulation debriefing</td>
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</tbody>
</table>

4. If you replied to any question in #3 above as “Strongly Disagree” or “Disagree,” can you please provide an explanation for your opinion.

5. What changes (if any) would you like to see that would improve the experience?
References:


