Maryland EMT-Basic Practical Examination Manual

Effective August 1, 2006
Version 1.0
Forward

The 2006 version of the Maryland EMT-Basic Practical Examination is the result of much hard work, dedication, and consensus from Maryland’s finest EMS coordinators, instructors, and evaluators. The enhancements made to the examination are based on EMS provider data (MAIS and eMAIS), research particular to emergency medical services, as well as expert input from providers and instructors alike. The forms associated with this examination, as well as the accompanying scenarios and logistics have evolved throughout the development process and are now being implemented as a result of consensus built from all involved parties, including MSFA, MFRI, MIEMSS, community colleges, commercial ambulance services, academies, and other agencies.

The reasons for modifying the EMT-B practical examination stemmed from the release of the 2005 American Heart Association Guidelines for CPR and Emergency Cardiovascular Care which presented to the BLS community some significant changes from previous CPR and AED practices. Every medical scenario set of the previous practical examination was impacted by these changes and modifications were necessary to align with the new AHA guidelines. SEMSAC’s BLS Committee viewed the need to modify the examination as an opportunity to enhance not only the CPR and AED sections of the exam, but an opportunity to enhance the format of the exam as well. The Committee took the practical examination revision on as a project in November, 2005 and continuously improved it to where it is today.

The examination aligns with the 1994 DOT EMT-Basic curriculum and has gone through pilot testing as well as standard setting to determine appropriate pass criteria and significant actions. The examination is anticipated to take approximately the same time to complete as the former EMT-Basic examination, but yet allow for a broader assessment of the entry-level EMT-Basic candidate’s skill abilities. The new examination is comprised of a medical assessment station, a resuscitation station, and a trauma station. All three stations are explained as follows:

- **MEDICAL STATION:** Within this station, the candidates will be objectively evaluated in patient assessment and patient management with an intervention (pharmacological or otherwise). Each candidate will be presented with one of about a dozen medical scenarios and will be required to appropriately assess the patient and make an intervention as required. Also within the medical station, each candidate will be assessed with their ability to take blood pressures and pulses on a real person or a BP arm manikin.

- **RESUSCITATION STATION:** This station focuses on a straight forward cardiac arrest scenario in which the candidates will demonstrate CPR and AED in accordance with the 2005 AHA guidelines. The candidates may encounter a witnessed or unwitnessed adult or child in cardiac arrest. There is also a second component to the station that focuses on airway management. Here, the candidates will demonstrate, through a simple scenario, basic airway management using a BVM, oxygen, OPAs, NPAs, and/or suction. The reason for having the "airway" station in addition to the CPR/AED is due to the criticality of the airway skills, as well as research which indicates a high attrition with skill performance with EMT-Basic providers.
• TRAUMA STATION: Candidates will work as a team and demonstrate a patient assessment on a trauma patient. Within the trauma assessment, the candidates will be required to demonstrate spinal immobilization. Given that the number one trauma skill performed by EMT-Basics is spinal immobilization, the committee has decided to incorporate spinal immobilization testing for every entry-level candidate tested. At the conclusion of the patient assessment and spinal immobilization scenario, the candidates will be presented with a random basic skill for which they must successfully demonstrate treatment. For this skill, the candidates will be asked to provide treatment for an isolated injury for a patient with normal vital signs and no other injuries.
Medical Station:

The medical station is sub-divided into two components using the following forms:
1. Patient assessment of a medical patient with a medical intervention;
   - Medical Assessment/Management Medical
2. BP and pulse assessment using a real person or BP arm manikin
   - Blood Pressure & Pulse

Equipment necessary for the station:
- BP cuff
- Stethoscope
- Penlight
- Epi-pen trainer (& Epi-pen Jr. if available)
- Nitroglycerin (trainer)
- Glucose paste
- Activated charcoal
- Inhaler

The purpose of the medical station is to objectively assess each candidates’ abilities to assess and manage a medical patient. To that end, each candidate will be required to demonstrate a full patient assessment on their own and then provide a medical intervention (i.e., nitroglycerin tablet, epinephrine auto-injector, inhaler…). Also within the medical station, each candidate will be required to successfully demonstrate taking a blood pressure and pulse on a real person or on a calibrated BP arm provided by MIEMSS.

The candidates will be individually presented with a medical scenario in which they must do a methodical patient assessment and then intervene with a treatment as indicated. The major components of the medical patient assessment are taken from the DOT curriculum, Maryland protocols, and all textbooks currently in use by Maryland EMS educational programs. The components of the assessment are: scene size-up, initial assessment, focused history and physical exam/rapid assessment, and on-going assessment. Each candidate is required to achieve 17 out of 24 points and also must not have any of the following significant actions in order to pass:
- Failure to verbalize/take BSI precautions
- Failure to determine scene safety
- Dangerous/inappropriate intervention/medication error (i.e. provider sticks self with epinephrine auto-injector, provider gave nitroglycerin to a patient with a BP of 84/50…)
- Failure to find and/or address life threats or chief complaint
- Completion of physical exam/assessment before initial assessment
- Failure to initiate or delayed initiation of oxygen, if applicable
- Failure to assure adequate ventilation
- Failure to initiate immediate transport with critical patient
The following script is to be read to each candidate testing in the medical station:

Welcome to the medical station. This station is designed to assess each of your individual abilities to assess a medical patient and provide an appropriate treatment intervention. Also, you will each be assessed in your abilities to take a pulse and blood pressure.*

While conducting your assessment of this medical patient and while taking the vital signs,* I encourage you to verbalize what you are doing. Also, throughout the scenario, you are encouraged to ask any questions of either the patient or me, if needed. I will provide you with pertinent information regarding the patient and will be happy to answer any questions you may have. Before getting started, do you have any questions?

Candidate ___ will conduct the patient assessment intervention first while candidate ___ takes the BP and pulse. Once completed, you will switch.

*Read italicized portions if medical assessment and BP/Pulse stations are done by the same evaluator.

After demonstrating the patient assessment and intervention, both candidates are required to individually demonstrate how to take both the pulse and blood pressure on a real person or on a BP arm manikin. The manikin arm is a calibrated manikin that allows for palpation and auscultation. Candidates must achieve five out of eight points for the BP and pulse skill and also not have any of the following significant actions in order to pass:

- BP more than 10 mmHg off
- Pulse more than 10 bpm off

If the BP station is done as a stand alone station, the following is read:

Welcome to the blood pressure and pulse station. This station is designed to assess each of your individual abilities to take a pulse and blood pressure.

While taking the vital signs, I encourage you to verbalize what you are doing. Before getting started, do you have any questions?

Once the BP and pulse are obtained, the candidates will write that number down on a piece of paper. If the candidate reports a BP or pulse > 10 mmHg from that recorded by the evaluator, the candidate will be required to re-take the vital signs before leaving the station. If the reported reading is still >10 mmHg off, the point should not be awarded and the appropriate S.A. checked.

Logistically, it is believed to be best to have the team of candidates in the testing station at the same time and have one candidate taking vital signs (on the manikin arm or evaluator) while the other is concurrently doing the patient assessment and intervention. Once completed, the candidates will switch. Also, each candidate of the team will be given a different medical scenario while testing.
Resuscitation Station

The resuscitation station is sub-divided into two components using the following forms:

1. CPR/AED;
   - Witnessed Cardiac Arrest Management/AED, or
   - Unwitnessed Cardiac Arrest Management/AED
2. Airway management
   - Bag-Valve-Mask and Airway Management

Equipment necessary for the station:

- Airway manikin capable of being ventilated, suctioned, and having both an OPA and an NPA inserted into it
- CPR manikin (if possible, a CPR manikin that can have an OPA inserted)
- AED trainer (ideally one that is fully compliant with the 2005 AHA Guidelines)
- BVMs – adult and pediatric with several sized masks
- Several OPAs & NPAs with at least one of each fitting into the manikin
- Suction catheter
- Suction device

The purpose of the resuscitation station is to objectively evaluate the candidates’ abilities to appropriately manage a patient in cardiac arrest and assess the candidates’ abilities to manage the airway of patients. Acting as a team, the candidates will be presented with either an adult or pediatric patient in cardiac arrest (witnessed or unwitnessed) and they must demonstrate how they would manage the patient using appropriate ventilatory techniques, correct CPR techniques, and safe and effective AED usage. After completion of the simple and straightforward cardiac arrest scenario, both candidates will again work together as a team and demonstrate airway management skills. The students will be presented with a patient requiring ventilation (assisted or otherwise) and some sort of airway adjunct (OPA or NPA). Also, candidates may be presented with a situation that warrants suctioning. Given the criticality of airway management and recent studies showing the rapid degradation of EMS providers’ abilities to properly manage patients’ airways, the BLS Committee felt it most appropriate to evaluate every entry-level candidate’s abilities to manage the airway of a patient.

Each candidate will have the opportunity to be a team leader in either the cardiac arrest or the ventilatory management skill. As a result, both will be assessed at performing an initial assessment in detail. Whoever is team leader for the skill is responsible for the initial assessment.
The cardiac arrest scenario is intended to simply evaluate arrest management techniques and will be void of any extraneous information. All CPR performed must be in compliance with the 2005 American Heart Association Guidelines for CPR and Emergency Cardiovascular Care. Each team is required to achieve 13 out of 19 points for an “unwitnessed arrest,” and also must not have any of the following significant actions in order to pass:

- Did not take or verbalize body substance isolation precautions
- Did not open airway or delayed the opening of the airway
- Delayed use of AED once two minutes of CPR have been provided
- Improper CPR technique including compression depth, rate and/or ratio
- Delayed start of CPR once pulselessness is determined
- Did not assess the pulse prior to beginning CPR
- Inappropriate or dangerous technique with AED (i.e., did not clear prior to shocking…)

For the “witnessed arrest,” each team must achieve 13 out of 18 points and also must not have any of the following significant actions in order to pass:

- Did not take or verbalize body substance isolation precaution
- Did not open airway or delayed the opening of the airway
- Improper CPR technique including compression depth, rate and/or ratio
- Did not assess the pulse prior to beginning CPR
- Inappropriate or dangerous technique with AED
- Delayed use of AED (i.e. for witnessed arrest, AED should be used immediately)

The following script is to be read to each candidate testing in the resuscitation station:

Welcome to the resuscitation station. This portion of this station assesses your abilities to manage a patient in cardiac arrest.

While doing this CPR/AED skill, I encourage you to verbalize what you are doing. I will provide you with pertinent information regarding the patient and will be happy to answer any questions you may have. For this skill, you will function as a team. Candidate number __** will be the team leader for the CPR/AED portion of the skill. Before getting started, please take a minute to familiarize yourself with the equipment available to you and also, please let me know if you have any questions…

**determined the day of the exam if even or odd is team leader

Once the team completes the resuscitation of either the adult or pediatric cardiac arrest, they will be required to demonstrate airway management techniques. Using an adult airway manikin, the team will be presented with either an apneic patient or a patient requiring ventilatory assistance. The team will be required to do an initial assessment and manage the patient’s airway using airway adjuncts (OPA or NPA), suction, and/or a bag-valve mask with supplemental oxygen. Each team must achieve 12 out of 18 points and also must not have any of the following significant actions in order to pass:

- Did not take or verbalize body substance isolation precautions/scene safety
- Did not assess breathing and determine that the patient is apneic
- Did not ventilate the patient within 30 seconds of starting the scenario
- Performed an inappropriate or dangerous airway adjunct and/or suctioning technique
- Did not open the airway
- Did not provide high concentration of oxygen
- Did not provide proper rate or volume for ventilations
Welcome to the airway portion of the resuscitation station. This station assesses your abilities to manage a patient’s airway and assist ventilations.

While doing this skill, I encourage you to verbalize what you are doing. I will provide you with pertinent information regarding the patient and will be happy to answer any questions you may have. Candidate number ** will be the team leader for this skill. During the skill, both of you will be required to demonstrate ventilations of the patient. Before getting started, please take a minute to familiarize yourself with the equipment available to you and also, please let me know if you have any questions.

** determined the day of the exam if even or odd is team leader
Trauma Station

The trauma station is sub-divided into two components using the following forms:

1. Trauma patient assessment with supine spinal immobilization;
   - Patient Assessment/Management – Trauma and
   - Spinal Immobilization Supine Patient

2. Random basic skill
   - Bleeding Control/Shock Management,
   - Evisceration,
   - Hip Injury,
   - Impaled Object,
   - Immobilization Skills - Joint Injury,
   - Immobilization Skills - Long Bone,
   - Spinal Immobilization – Seated Patient, or
   - Immobilization Skills – Traction Splinting

Equipment necessary for the station:
- Stethoscope
- Penlight
- Several cravats (5 or more)
- Several splints of varying sizes (small, medium, & large)
- Several dressings (4X4s, trauma dressings) and bandages (rolled kling)
- Traction splint device
- Half-spine immobilization device
- Blanket
- Occlusive dressing
- Full spine board with cervical immobilization device and varying types of strapping in accordance with local practices

The purpose of this station is to objectively evaluate the candidates’ abilities to assess a trauma patient, provide supine spinal immobilization, and then afterwards, treat a random basic skill. In every scenario, one candidate will be team leader for the patient assessment with the other maintaining cervical spine stabilization. During the scenario, the candidates are required to do a full trauma assessment and then place the patient onto a full backboard for spinal immobilization. Once completed, the candidates will be presented with a separate and unrelated random basic skill.

Acting as a team, the candidates will be presented with a trauma patient who requires a complete trauma assessment and supine spinal immobilization. The major components of the trauma patient assessment are taken from the DOT curriculum, Maryland protocols, and all textbooks currently in use by Maryland EMS educational programs. The components of the assessment are: scene size-up, initial assessment, focused history and physical exam/rapid assessment, detailed physical exam, and on-going assessment. During the scenario, the team will be required to demonstrate spinal immobilization. To assist with log rolling, the candidates will have an EMT assistant and the evaluator available for their use. The candidate who is NOT the team leader is responsible for maintaining cervical spine stabilization until the patient is on a long backboard. Each team is required to achieve 26 out of 37 points for the trauma patient assessment and also must not have any of the following significant actions in order to pass the patient assessment portion of the exam:
• Failure to verbalize/take BSI precautions
• Failure to determine scene safety
• Failure to consider C-spine stabilization, if applicable
• Failure to find and/or address life threats or chief complaint
• Completion of physical exam/assessment before initial assessment
• Failure to initiate or delayed initiation of oxygen
• Failure to assure adequate ventilation
• Failure to assess/control major bleeding
• Failure to initiate immediate transport with critical patient

Additionally, each team must achieve seven out of ten points for the supine spinal immobilization component of this scenario and must not have any of the following significant actions in order to pass the supine patient spinal immobilization portion of the exam:
  • Failure to verbalize/take BSI precautions/scene safety
  • Released or ordered release of manual stabilization before it was maintained mechanically
  • Patient manipulated or moved excessively, causing potential spinal compromise
  • Patient moves excessively up, down, left, or right on the device
  • Head immobilization allows for excessive movement
  • Upon completion of immobilization, patient is not in the neutral in-line position
  • Did not assess distal pulse, motor, or sensation, and after immobilization to the device
  • Did not reassess distal pulse, motor, or sensation, and after immobilization to the device
  • Immobilized head to the board before securing torso

Once the team completes the trauma assessment and supine spinal immobilization, they will be presented with a second scenario where they must demonstrate the management of an isolated injury. The team must demonstrate treatment for one of the following random basic skills: bleeding control, evisceration, hip injury, long bone injury, joint injury, impaled object, seated spinal immobilization, or traction splint. The candidate who was NOT the team leader for the trauma patient assessment and spinal immobilization component of this station will be the team leader for the random basic skill. The minimum passing score and significant actions for each of the skills are outlined below:

Bleeding Control: The team must achieve seven out of ten points and must not have any of the following significant actions to pass:
  • Failure to verbalize/take BSI precautions/scene safety
  • Did not ensure high concentration of oxygen
  • Applied tourniquet
  • Did not control hemorrhage within 3 minutes of starting the scenario

Evisceration: The team must achieve five out of eight points and must not have any of the following significant actions to pass:
  • Failure to verbalize/take BSI precautions/scene safety
  • Attempts to clean eviscerated organs
  • Bandage puts pressure onto evisceration
  • Uses a dry dressing on the wound
  • Manually reinserts organs
Hip Injury: The team must achieve seven out of ten points and must not have any of the following significant actions to pass:

- Failure to verbalize/take BSI precautions/scene safety
- Immobilization allows for excessive movement of hip
- Excessive movement of hip throughout scenario
- Manual stabilization is not maintained
- Did not assess distal pulse, motor, or sensation before splinting
- Did not reassess distal pulse, motor, or sensation after splinting

Impaled Object: The team must achieve five out of eight points and must not have any of the following significant actions to pass:

- Failure to verbalize/take BSI precautions/scene safety
- Removal of impaled object
- Excessive movement of impaled object throughout scenario
- Pushing of impaled object further into patient

Joint Injury: The team must achieve seven out of ten points and must not have any of the following significant actions to pass:

- Failure to verbalize/take BSI precautions/scene safety
- Did not immobilize bone above and below injured joint
- Did not support the joint so that the joint did not bear distal weight
- Did not assess distal pulse, motor, or sensation before splinting
- Did not reassess distal pulse, motor, or sensation after splinting

Long Bone: The team must achieve seven out of ten points and must not have any of the following significant actions to pass:

- Failure to verbalize/take BSI precautions/scene safety
- Grossly moves injured extremity
- Did not assess distal pulse, motor, and sensation before splinting
- Did not immobilize adjacent joints
- Did not reassess distal pulse, motor, and sensation after splinting

Seated Spinal Immobilization: The team must achieve nine out of thirteen points and must not have any of the following significant actions to pass:

- Failure to verbalize/take BSI precautions/scene safety
- Released or ordered release of manual immobilization before it was maintained mechanically
- Patient manipulated or moved excessively, causing potential spinal compromise
- Device moves excessively up, down, left, or right on patient's torso
- Head immobilization allows for excessive movement
- Torso fixation inhibits chest rise, resulting in respiratory compromise
- Upon completion of immobilization, head is not in the neutral in-line position
- Did not assess distal pulse, motor, and sensation before voicing immobilization to the long board
- Did not reassess distal pulse, motor, and sensation after voicing immobilization to the long board
- Immobilized head to the board before securing torso
Traction Splint: The team must achieve ten out of fourteen points and must not have any of the following significant actions to pass:

- Failure to verbalize/take BSI precautions/scene safety
- The foot is excessively rotated or extended after splinting
- Loss of traction at any point after it is assumed
- Did not assess distal pulse, motor, and sensation before splinting
- Did not reassess distal pulse, motor, and sensation after splinting
- Did not secure the ischial strap before taking traction
- Final immobilization failed to support the femur or prevent rotation of the injured leg
- Secured leg to splint before applying mechanical traction

The following script is to be read to each candidate testing in the trauma station:

Welcome to the trauma station. This station consists of a patient assessment scenario with spinal immobilization and a random basic skill. This first portion of this station is trauma patient assessment with spinal immobilization and is designed to evaluate your ability to assess and verbalize treatments to a trauma patient. Additionally, you will be required to provide and actually demonstrate your abilities with full spinal immobilization for the patient you are assessing. At the conclusion of this portion, you will receive an additional set of instructions for the random basic skill. You have a third rescuer available to assist you as needed and are responsible for the direction and subsequent actions of the EMT assistant throughout this scenario. Also, when necessary, I am available to assist you with log rolling the patient. When asked, I will provide you with information regarding the patient's vital signs. You have twenty minutes to complete this station. Before we start with this scenario, please take a few moments to examine your equipment you have available to you and let me know if you have any questions... Candidate number __** will be the team leader for the patient assessment and spinal immobilization skill...

* The italicized portions are read to candidates if the patient assessment/spinal immobilization and random basic skill components are done by the same examiner.

** determined the day of the exam if even or odd is team leader

Once the candidates complete the trauma patient assessment and spinal immobilization, they will undo the spinal immobilization. In the meantime, the patient will be readied for the random basic skill.

The following script is to be read to each candidate testing in the trauma station for the random basic skill component:

This portion of the trauma station assesses your ability to manage an isolated random basic skill. For purposes of this exam, you have completed an assessment and found an isolated injury: _ (mention skill here...)_ requiring treatment. All vital signs are within normal limits and your assessment has revealed nothing additional requiring your intervention. You have a third rescuer available to assist you as needed and are responsible for the direction and subsequent actions of the EMT assistant throughout this scenario. You have ten minutes to complete this station. Before we start with this scenario, please take a few moments to examine your equipment you have available to you and let me know if you have any questions... Candidate number __** will be the team leader for the patient assessment and spinal immobilization skill...

** determined the day of the exam if even or odd is team leader. Whoever was not the team leader for the trauma patient assessment portion should be the team leader for this random basic skill.
Team Leader Designation

The day of the practical examination, team leader designation will take place. One of the following two matrixes will be used for the course of the examination:

**Matrix 1**

<table>
<thead>
<tr>
<th>Station</th>
<th>Skill</th>
<th>Odd # Candidate</th>
<th>Even # Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical</td>
<td>Patient Assessment with Intervention</td>
<td>T.L.</td>
<td>T.L.</td>
</tr>
<tr>
<td></td>
<td>BP/Pulse</td>
<td>T.L.</td>
<td>T.L.</td>
</tr>
<tr>
<td>Resuscitation</td>
<td>CPR/AED</td>
<td>T.L.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airway Management</td>
<td></td>
<td>T.L.</td>
</tr>
<tr>
<td>Trauma</td>
<td>Patient Assessment with Spinal Immobilization</td>
<td></td>
<td>T.L.</td>
</tr>
<tr>
<td></td>
<td>Random Basic Skill</td>
<td>T.L.</td>
<td></td>
</tr>
</tbody>
</table>

**Matrix 2**

<table>
<thead>
<tr>
<th>Station</th>
<th>Skill</th>
<th>Odd # Candidate</th>
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</tr>
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</tr>
<tr>
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<td>T.L.</td>
<td></td>
</tr>
</tbody>
</table>
Retesting

The purpose of testing is to protect the public by ensuring entry-level competency of all EMTs. In the event when less than optimal skills are performed, the candidate must be retrained and retested prior to being certified. Ideally, every candidate will successfully demonstrate entry-level competency during the course of the examination, given their extensive preparation and course work prior to entering the testing process. In the event that a candidate is unsuccessful with a segment or segments of the practical examination, he/she must retest that segment at another date and time. Prior to being eligible to retest, the candidate must receive documented remedial training in the skill(s) with which he/she was unsuccessful. If a candidate is unsuccessful with only portions of a segment, he/she must retest that entire skill. For example, if a team successfully demonstrates trauma patient assessment and spinal immobilization but, while applying a traction device loses manual traction and thus causes harm to the patient during the process, they must retest the entire traction splinting random basic skill, but not the trauma patient assessment/spinal immobilization segment. If a candidate fails to demonstrate an acceptable medical patient assessment, but successfully takes a BP and pulse, he/she must retest the medical patient assessment and intervention on another date, after receiving remedial training.