Emergency Medical Services (EMS) EMER 544

2014-2015 Course Resource Guide



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Contents

[Emergency Medical Services (EMS) EMER 544 1](#_Toc391501194)

[Course Manual Updated June 25, 2014 1](#_Toc391501195)

[Faculty Responsible: 1](#_Toc391501196)

[Administrative Contact: 1](#_Toc391501197)

[Description and Goals 4](#_Toc391501198)

[Objectives 4](#_Toc391501199)

[Prerequisites 5](#_Toc391501200)

[Location(s): -University of Maryland Medical Center -Steadman Fire Station -Baltimore City Division of EMS Training -Baltimore County Fire Department Division of EMS -Additional sites and locations depend upon selected modules 5](#_Toc391501201)

[Number of Students 5](#_Toc391501202)

[Time of Year Available 5](#_Toc391501203)

[Hours 5](#_Toc391501204)

[Deliverables 5](#_Toc391501205)

[Grading 6](#_Toc391501206)

[Suggested Reading 6](#_Toc391501207)

[Getting Started 7](#_Toc391501208)

[EMS Core Modules 8](#_Toc391501209)

[Operational EMS 9](#_Toc391501210)

[EMS Administration and Research 10](#_Toc391501211)

[EMS Research 12](#_Toc391501212)

[Emergency Preparedness and Disaster Response 15](#_Toc391501213)

## Description and Goals

The goal of this rotation is to provide the student with exposure to Emergency Medical Services (EMS) and how prehospital care works within a hospital system. Student will run shifts with local EMS agencies, assist prehospital providers in caring for patients, complete online learning activities, and observe physician interactions with EMS systems including QA/QI processes and training of prehospital providers. The student will also participate in special events medical standbys that may occur during his/her time with the rotation. There will be didactic lectures, required reading, and online interactive activities for the student to use as supplemental learning.

## Objectives

1. Familiarize the learner with prehospital medical skills including intravenous access, medication administration, immobilization, cardiopulmonary resuscitation (CPR), basic life support (BLS), advanced cardiac life support (ACLS)
2. Familiarize the learner with EMS structure and command systems through didactic lectures and online resources
3. Expose the learner to EMS prehospital provider care through ride-alongs with Baltimore City Fire Department teaching the student how to:
   1. Obtain a complaint-specific history and physical in a prehospital patient with an undifferentiated illness or injury
   2. Recognize seriously ill patients and learn how to treat immediate life threats
   3. Understand the prehospital management of medical and trauma patients prior to their arrival to the emergency department
   4. Formulate a differential diagnosis and management plan for prehospital patients
   5. Develop skills on how prehospital clinical information is presented to receiving facilities
4. Expose the learner to EMS administration through ride-alongs with Baltimore City EMS Supervisors and learn how medical oversight is provided to prehospital providers
5. Expose the learner to EMS command systems and dispatch through Maryland Institute for Emergency Medical Services Systems (MIEMSS)
6. Learn how disaster management and mass casualty incidents are coordinated by EMS provider

### Prerequisites

None

### Location(s) -University of Maryland Medical Center -Steadman Fire Station -Baltimore City Division of EMS Training -Baltimore County Fire Department Division of EMS -Additional sites and locations depend upon selected modules

### Number of Students

2

### Time of **Year** Available

Year-round

### Hours

Varies. Shiftwork including morning, afternoon, and night shifts

### Deliverables

Deliverables for this course will vary depending upon the module schedule each student selects for themselves in conjugation with feedback from the course director. All students, regardless of schedule, will be expected to complete:

* At least 2 online IS courses (see Emergency/Disaster Response section)
* Develop at least 1 didactic for EMS providers (see EMS Leadership section)
* Midway feedback: At the end of your second week you will meet with the director to discuss how the course is going. You will likely be in close contact with the director and other relevant contacts throughout the course, but this session is meant to ensure an opportunity to maximize your time on elective.

### Grading

This course is meant to provide motivated and interested students opportunities to explore some of the varied systems and careers that EMS has to offer. While we provide as much support as possible, much of what you get out of the course will reflect what you put in. You will have the opportunity to interact with numerous agencies will out in the field, many of whom have had only limited contact with UMMC physicians and medical students. Please remember that the impression you make is important, not only for yourself but for future students on rotation. Final grades for the course will be decided by the course director with input from the other key contacts that you worked with during your month. Grades will follow the standard Honors, A, A-, B+, B, etc. format.

### Suggested Reading

1. Avoiding Common Prehospital Errors, 2012, by Lawner et al.
2. ECG Cases for EMS 2012, by Mattu, Lawner et al.
3. Emergency Medical Services: At the crossroads, 2007, by Committee on the Future of Emergency Care
4. Prehospital Emergency Care, 2013 (10th ed), by Mistovich et al.

## Getting Started

Before getting started with your EMS rotation, there are a few tasks you must complete:

1. EMS Ride Along Waiver
   1. This waiver should be completed and returned to the course director **2 weeks prior** to the start of your rotation. A copy of the waiver is found within this orientation packet. Returning this late may jeopardize your ability to complete ride alongs.
2. Module Selection
   1. The module system is described below, it is meant to give students extra flexibility in designing this elective. However, for things to go smoothly we need an idea of your module selection before starting the course. Please email your module selection to the course director **1 week prior** to starting the rotation.
3. Setting up your calendar
   1. Having an electronic calendar accessible to yourself and the course director will help simplify the organization of your rotation.
   2. **1 week prior** to the start of your rotation please contact Dr. JV Nable ([jvnable@gmail.com](mailto:jvnable@gmail.com)) to get a username and access to the electives webpage, available at: [www.doctorEMS.com](http://www.doctorEMS.com)

## EMS Core Modules

This elective is constructed upon 4 key concentration areas within EMS. These *modules* consist of: (**1**) **Emergency Preparedness and Disaster Response**; (**2**) **EMS Training and Education**; (**3**) **Operational EMS**; and (**4**) **EMS Administration and Research**. Opportunities are available to students in each module and students have the flexibility to design their elective around a focused interest. Students may choose to have experiences in all 4 modules during their month, or they may limit their experience to 2 or 3 modules. Try to think of the modules as areas of focus rather than contiguous segments of time, as many of them will actually involve activities interspersed throughout the month. Students wishing to focus the whole month in a single concentration need prior approval from the course director.

### Operational EMS

The fastest moving module, this concentration allows students to experience pre-hospital care with some of the area’s best providers. Students will have the opportunity to work with two separate critical care transport organizations. They will also have a chance to learn tricks of the trade from paramedics and see how first responder services are coordinated with BCFD communications. Additionally, students are invited to sit in on any training events that may be occurring in the Baltimore area concurrent to their elective month.

A great way for medical students to give back includes helping to develop/deliver didactic sessions for the medics/EMTs. Please see the **EMS Training and Education** section for more information.

#### Interfacility and Critical Care EMS

|  |  |  |
| --- | --- | --- |
| **Wade R Gaasch, MD, FAAEM** | Medical Director, Maryland ExpressCare | [Wade.gaasch@baltimorecity.gov](mailto:Wade.gaasch@baltimorecity.gov) |
| **Mike McCabe, NRP** | Base Manager, PHI / Maryland ExpressCare | [mmccabe@phihelico.com](mailto:mmccabe@phihelico.com) |

Location: UMMC and Martin State Airport

Ride along with critical care crews and observe more specialized components of interfacility EMS including aeromedical transport and ventilator management. Students will also have the opportunity to participate in the on-going training sessions that offer a hands-on element lacking in the medical school curriculum. Due to energy requirements aboard the helicopters, fly alongs are only available during non-summer months.

#### Baltimore City Fire Department , EMS Division

|  |  |  |
| --- | --- | --- |
| Kara Sipes, NRP | Lieutenant, BCFD | [Kara.sipes@baltimorecity.gov](mailto:Kara.sipes@baltimorecity.gov) |

Location: Various, Steadman Station at the corner of Eutaw and Lombard Streets:

<http://archive.baltimorecity.gov/Government/AgenciesDepartments/Fire/FireStations.aspx>

Ride along with first line ALS response units from the Baltimore City Fire Department's EMS division. BCFD is an urban, all hazards response organization that responds to over 150,000 requests for EMS service per year. 24 full time “Medic” units provide advanced life support services to Baltimore’s citizens. Peak load and critical alert medic units supplement daily operations. Residents are assigned to either veteran paramedic preceptors or an EMS Lieutenant. Experiences will include shifts with supervisory EMS officers.

***Baltimore County Fire Department EMS Division***

|  |  |  |
| --- | --- | --- |
| **Morgen Bernius, MD, MS** | Deputy Medical Director, BCoFD | [Morgen.bernius@gmail.com](mailto:Morgen.bernius@gmail.com) |
| **Steve Adelsberger, Captain** | EMS Officer, BCoFD | [sadelsberger@baltimorecounty.gov](mailto:sadelsberger@baltimorecounty.gov) |

**Location**: Halethorpe, MD

Students will participate in EMS responses while accompanying a Baltimore County EMS District Officer, EMS-5. The Baltimore County Fire Department serves responds to approximately 120,000 calls per year and contains 48 advanced life support transport units. The department is comprised of 25 career stations with 1100 members. The EMS officer supervises the delivery of prehospital care, interfaces with local hospitals, and functions as an integral part of quality assurance.A list of the career and volunteer fire stations with their attending units and addresses can be found at: <http://www.baltimorecountymd.gov/Agencies/fire/stationinfo/>.

### EMS Administration

This module makes a good companion to **EMS Operations**. You will focus on the leadership and administrative roles of that come with the title of Medical Director. You will have an opportunity to see what goes into directing city, county and statewide emergency medical services by spending time with key figures in the Maryland EMS network, participating in high level meetings, and organizing didactics for first-responders. Students may also spend time watching the coordination of on-the-fly EMS operations at MIEMSS and SYSCOM.

EMS System Administration

*Maryland Institute for Emergency Medical Services Systems (MIEMSS)*:

Contacts: Drs. Lawner and Alcorta

Dr. Alcorta and the staff at MIEMSS remain willing to meet with students to discuss aspects of system medical direction from a "statewide perspective." At MIEMMS you may tour SYSCOM/EMRC, the state's communication resource center. Students have also been invited to participate in the monthly Protocol Review Committee (PRC) meeting. The PRC Meeting is a monthly session that includes high level EMS representatives from across the state who come together to review the guidelines which delineate a scope of practice for all prehospital providers.

**Overview of MIEMSS:**

MIEMSS is a state agency charged with system development and oversight. MIEMSS serves many functions. In addition to coordinating resources, MIEMSS designates trauma and specialty centers. The agency provides leadership and facilitates communication between EMS providers, hospitals, and regional resources. The State Medical Director chairs the Protocol Review Committee which meets regularly to review, update, and publish evidenced based EMS treatment guidelines. Students will have the opportunity to observe at SYSCOM, the state’s communication center that coordinates medevac requests and dispatches. They can also participate in quality assurance, protocol review, and research.

**The MIEMSS mission statement:**

The Maryland Institute for Emergency Medical Services Systems (MIEMSS) oversees and coordinates all components of the statewide EMS system (including planning, operations, evaluation, and research), provides leadership and medical direction, conducts and/or supports EMS educational programs, operates and maintains a statewide communications system, designates trauma and specialty centers, licenses and regulates commercial ambulance services, and participates in EMS-related public education and prevention programs.

### EMS Research

The field of EMS is a unique and fertile ground for research. Throughout your month research questions will be raised in nearly every setting, and as a medical student you are uniquely situated to initiate research or contribute to ongoing projects. EMS Research is the most flexible module. There are several quality assurance and improvement meetings that you will be invited to attend, as well as a monthly EMS Research group that is made up of joint representation between Hopkins and Maryland faculty. If you have research ideas ahead of time, you are encouraged to bring them up before the course starts to the course director, so that he may advise you on the feasibility of the project and such logistics issues as IRB approval.

What can be equally rewarding is joining forces with key contacts you make during the month to develop the projects and questions that in their experience are most germane to the field. EMS personnel are eager to formulate their own research questions based on day to day experience and could use your help to guide them through the process of research design, IRB approval, data collection and analysis, and submission and publication of results. Medical students can also provide a conduit through which field personnel can connect to UMMC faculty research advisors.

#### Key Meetings:

Maryland Emergency Medical Services Systems Research Interest Group (MEMSS-RIG), National Study Center for the Study of Trauma, 3rd Floor Paca/Pratt Building, 1330-1530

The MEMSS-RIG represents a collaborative effort between academic medical centers (Hopkins/UMMC) and the Maryland Institute for Emergency Medical Services Systems. The group vets research proposals and focuses on EMS-specific projects such as helicopter utilization and EMS treatment protocols.

STEMI Committee Meeting, UMMC Cardiology Conference Room, 3rd Floor Gudelsky Building 0900-100 hours  
The STEMI committee monitors clinical benchmarks such as door to balloon times. The Committee works with EMS agencies and the UMMC emergency department to expedite the treatment of STEMI patients. Representatives from the CCU, BCFD, and the ED, serve on the committee.

**EMS Training and Education**

Physician medial directors are responsible for the training and education of prehospital personnel. You will work with jurisdictional training officials and observe how paramedics are educated. Participation in skills training and attendance at various lectures is encouraged. Students will also have the opportunity learn various prehospital life support skills including basic dysrhythmia recognition, intravenous access, and airway management.

**Contact Information**

|  |  |  |
| --- | --- | --- |
| **David Freeman, MS, NRP, MICRB III** | Clinical Instructor, UMSOM Department of Emergency Medicine | [davyj1@live.com](mailto:dDavyj1@live.com) |
| **Kara Sipes** | Lieutenant, Baltimore City Fire Department EMS Division | [Kara.sipes@baltimorecity.gov](mailto:Kara.sipes@baltimorecity.gov) |

**Location:**

Various

An important contribution you can make includes helping to develop didactic sessions. Students are asked to creating a lecture-quality presentation focused on EMS continuing education objectives. Presentations will last 45 minutes in length and permit adequate time for discussion or question/answer. Students will also create a minimum of three questions to follow at the conclusion of the lecture. These presentations are intended to address the continuing education needs of emergency medical services providers. Particular areas of interest include ventilation, neuro, sepsis, anesthesia, and case reviews. While covering the basics of these areas may be useful as a refresher, didactics should be primarily oriented towards covering latest developments in these fields as applicable to critical care transport medicine.

It is recommended for the medical students to develop the didactics in partnership with a faculty member who has particular expertise in that area. Also, the med students should administer a brief feedback sheet to participants afterwards to ensure the teaching remains useful and interesting for participants. Presentations will be subject to peer review and submitted for continuing medical education credit.

Lectures should strive for an element of interactivity; simple power point presentations are discouraged. Ideally, students will utilize equipment available at either the BCFD training academy or the Department of Emergency Medicine offices to create a video-enhanced voice over presentation. Please do not hesitate to contact any of the EMS faculty with any additional questions or concerns. Presentations should be submitted by the end of the EMS block.

*Please note*: BCFD is very interested in developing a bank of lectures that can become a permanent part of their provider training. Medic Dave Freeman has all the equipment you would need to record your presentation with voice-over, and is very excited and willing to help students with this process. The PHI/Express Care services have also expressed interest having access to this increased training for their providers. This is a contribution you can make that will be highly valued!

***Possible EMS educational opportunities***

* R Adams Cowley Shock Trauma Center’s EMS Airway Course
* Case Reviews, Community College of Baltimore County
* EMS skills labs
* Critical Care Emergency Medical Transport Program
* Baltimore City Fire Department ALS continuing education program

**Some resources:**

National Registry of EMTs Recertification Requirements:

[https://www.nremt.org/nremt/about/reg\_para\_history.asp#Paramedic\_Recertification](https://mail.som.umaryland.edu/owa/redir.aspx?C=29432a569d394328b2bed1bbe7e12a4c&URL=https%3a%2f%2fwww.nremt.org%2fnremt%2fabout%2freg_para_history.asp%23Paramedic_Recertification)

National Highway and Traffic Safety Administration EMT Paramedic Refresher Curriculum:  
[http://www.nhtsa.gov/people/injury/ems/ems2001/Paramedic.htm](https://mail.som.umaryland.edu/owa/redir.aspx?C=29432a569d394328b2bed1bbe7e12a4c&URL=http%3a%2f%2fwww.nhtsa.gov%2fpeople%2finjury%2fems%2fems2001%2fParamedic.htm)

### Emergency Preparedness and Disaster Response

You'll work with hospital emergency management to review, revise, and implement a mass casualty plan. The plan touches on the foundations of the incident **c**ommand system. Other ongoing projects include hazardous materials awareness and physician-specific educational initiatives. Your chief contact, Mr. Savageau, has played a critical role in the development and roll-out of UMMC’s emergency preparedness and disaster response plan, and has valuable insights for students. He has also been known to provide students with tours of secret emergency stockpiles throughout the hospital area.

Within this module, students will also have the opportunity to receive national level training in disaster response and incident command system management. Time will be allotted for students to complete the IS 100, 200, 700, and 800 courses on national response frameworks. For the students that plan ahead of time, Craig can provide a list of all expense paid opportunities to travel out-of-state and be trained in disaster response that may be available during your month.

**Contact:**

|  |  |  |
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| Craig R. Savageau, MS | Emergency Management Coordinator, University of Maryland Medical Center | [csavageau@umm.edu](mailto:csavageau@umm.edu)  Office: 410.328.3467  Cell: 443.890.1073 |

***Emergency Preparedness Training and Education Opportunities:***

Federal Emergency Management Agency (FEMA)

<https://www.firstrespondertraining.gov/content.do?page=training>

FEMA Independent Study Courses

<https://training.fema.gov/IS/crslist.aspx?all=true>

Department of Homeland Security, Center for Domestic Preparedness (CDP)

<http://cdp.dhs.gov/>

Oak Ridge Institute for Science and Technology

<http://orise.orau.gov/reacts/>

Texas A&M Engineering Extension Service (TEEX)

<http://www.teex.com/nerrtc/>

New Mexico Tech

Energetic Materials Research and Testing Center

<http://www.emrtc.nmt.edu/training/>

Louisiana State University

National Center for Biomedical Research and Training

Academy of Counter-Terrorist Education

<http://www.ncbrt.lsu.edu/>

University of Hawaii

National Disaster Preparedness Training Center

<https://ndptc.hawaii.edu/>

Counter Terrorism Operations Support

Center for Radiological/Nuclear Training

Nevada National Security Site

<http://www.ctosnnsa.org/>

Training and exercises constitute essential components of disaster preparedness. A National Incident Management System has been developed, by presidential directive, in the wake of such disasters as September 11, 2011. NIMS creates a structured framework for all disaster responders at all levels (local, state, and federal). The federal government, through FEMA, has created online courses that allow for providers to meet the training requirements adopted by NIMS. The following are free online courses:

Website: http://training.fema.gov/IS/NIMS.aspx

[IS-100: Introduction to the Incident Command System](https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-100.b)

[IS-200: ICS in Healthcare Organizations](https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-200.HCa)

[IS-700: NIMS, An Introduction](https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-700.a)

[IS-800: The National Response Framework](https://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-800.b)

BCFDQuality Assurance & Improvement

**Contact:**

|  |  |  |
| --- | --- | --- |
| Willie Williams | Captain, Quality Assurance and Improvement, BCFD | [Willie.william@baltimorecity.gov](mailto:Willie.william@baltimorecity.gov) |

Location:

Section of EMS Training, Baltimore City Fire Department  
3500 W Northern Parkway, Baltimore MD 21215  
  
Captain Willie Williams is charged with cardiac arrest data analysis and prehospital quality improvement. Observe core functions of medical oversight including run report review and benchmark analysis.

The Baltimore City Fire Department is also attempting to gather data on the medical/trauma arrest patients that they transport to the various hospitals they serve. A way you can be helpful to this process is by providing a score on the Cerebral Performance Category (CPC) for each incident that comes into UMMC. This consists of several patients each month and all that will be needed is a chart review of the case in Cerner/First Net to assign a discharge CPC score, which will be sent to Capt. Williams. This data will help them evaluate their pre-hospital patient care efforts.

(See below for description of CPC scoring)

**CPC Scores**

Coding:

0= Died in ER

1= Admitted to Hospital but died before discharge

2= Discharge w/ CPC score of 3 or 4

3= Discharge w/ CPC score of 1 or 2

**Cerebral Performance Categories Scale**

**CPC Scale**

CPC 1. Good cerebral performance: conscious, alert, able to work, might

have mild neurologic or psychological deficit.

CPC 2. Moderate cerebral disability: conscious, sufficient cerebral

function for independent activities of daily life. Able to work in sheltered

environment.

CPC 3. Severe cerebral disability: conscious, dependent on others for

daily support because of impaired brain function. Ranges from ambulatory

state to severe dementia or paralysis.

CPC 4. Coma or vegetative state: any degree of coma without the

presence of all brain death criteria. Unawareness, even if appears awake

(vegetative state) without interaction with environment; may have

spontaneous eye opening and sleep/awake cycles. Cerebral

unresponsiveness.

**Acknowledgements and Additional Contacts  
  
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