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Introductory Emergency Medicine Clinical Skills Course: A Daylong Course Introducing Preclinical Medical Students to the Role of First Responders

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Abstract

Introduction: A complete medical school curriculum must include an introduction to first aid; the management of airway, breathing, and circulation; and basic medical emergencies. The September 11, 2001, terrorist attacks in New York underscored the need for such training for US students even in their preclinical years. During that tragedy, many Weill Cornell Medical College (WCMC) preclinical students were eager to volunteer at Ground Zero and in the emergency department, yet it was clear they were not prepared for even basic medical emergencies this early in their training. To address this gap, in 2002 we incorporated this expanded first-responder course into the first-year doctoring class at WCMC. **Methods:** The course includes a morning of lectures followed by related workshops. Students also practice managing ill patients in multiple case scenarios and participate in a tabletop disaster-management exercise. **Results:** This course has become a mainstay of our first-year curriculum, receiving high praise from students annually. It generates tremendous interest in emergency medicine and lays a foundation of basic emergency medicine knowledge for students at an early point in their education. **Discussion:** The unique experience of our medical school during the 9/11 tragedy highlighted the need for a course that would introduce preclinical medical students to the basic skills needed to assist in emergency scenarios in the field. Over the past 13 years, this course has developed into an essential part of our preclinical curriculum and has been strengthened through changes made based on student feedback.

Keywords

Emergency Medicine, First Responder

Educational Objectives

By the end of the course, the learner will be able to:

1. Describe the role of the first responder.
2. Perform basic emergency resuscitation.
3. Perform many of the critical actions necessary for a first responder to manage an ill or injured patient in nonmedical settings with limited resources.

Introduction

A complete medical school curriculum must include an introduction to first aid; the management of airway, breathing, and circulation (the ABCs); and basic medical emergencies.[1-3] The September 11, 2001, terrorist attacks in New York underscored the need for such training for US students even in their preclinical years. During that tragedy, many Weill Cornell Medical College (WCMC) preclinical students were eager to volunteer at Ground Zero and in the emergency department. It became clear that even in the preclinical years, students had begun assuming the professional identity of physicians. They felt responsible for caring for the injured but were not prepared for even basic medical emergencies. To address this gap in our curriculum and as an opportunity to foster professional identity formation, in 2002 we incorporated an

Appendices

A. Sample Assignments, Rotation Schedule, Room Labels.doc
B. Lecture #1 Introduction and Scene Safety.pptx
C. Lecture #2 Vital Signs.pptx
D. Lecture #3 Initial Assessment.pptx
E. Lecture #4 Secondary Assessment.pptx
F. Lecture #5 First Responding Trauma Patient .ppt
G. Lecture #6 First Responding Medically Ill .ppt
H. Workshop Guidelines Airway Skills.docx
I. Workshop Guidelines Disaster Medicine.docx
J. Workshop Guidelines Immobilization.docx
K. Workshop Guidelines Splinting.docx
L. Case Scenarios Syncope and Chest Pain.docx
M. Case Scenarios Seizure and Overdose.docx
N. Case Scenario Allergies, Anaphylaxis, and Angioedema.docx

All appendices are peer reviewed as integral parts of the Original Publication.

expanded first-responder course into the first-year doctoring class at WCMC, the Introductory Emergency Medicine Clinical Skills Course.[4]

The course was initially developed by authors Jeremy Sperling, currently the Chair of the Department of Emergency Medicine at the Jacobi Medical Center and North Central Bronx Hospitals, then the Associate Director of Emergency Medicine at NewYork-Presbyterian Hospital/WCMC and the Assistant Director of the NewYork-Presbyterian Emergency Medicine Residency Program, a bicampus program of Cornell and Columbia Universities; Wallace Carter, the Program Director of the NewYork-Presbyterian Emergency Medicine Residency Program; Neal Flomenbaum, then the Chief of Service of the Division of Emergency Medicine at NewYork-Presbyterian Hospital/WCMC; and Lyuba Konopasek, then the First-Year Doctoring Class Director at WCMC and now the Designated Institutional Official in the Office of Graduate Medical Education at NewYork-Presbyterian.

In 2001, WCMC charged its Division of Emergency Medicine with developing a course that would provide all entering medical students with core emergency medicine content. The emphasis of the course was on practical skills in order to provide the students with the confidence to apply these skills in appropriate settings while attending to their own safety. The course was also designed to foster the professional identity formation of first-year medical students by introducing them to their new roles and responsibilities as physicians in training.

The initial course outline was developed by selecting high-yield topics from current certified first-responder courses. A core curriculum for first-responder training for medical students was then developed. Teaching formats included lecture materials, small-group simulations, and hands-on skills stations. Author Wallace Carter had extensive experience as a paramedic training instructor and emergency medicine program director; he adapted relevant instructional materials from his prior teaching programs into the course.

In 2002, this course was incorporated into the first month of the first-year curriculum at WCMC. In 2010, this course became part of the first-year doctoring course at our sister campus in Doha, Qatar, the Weill Cornell Medical College in Qatar (WCMC-Q). The course, now a required part of the first-year curriculum at both campuses, has since been refined based both on the evolving needs of the students at the two campuses and on student feedback.

The course has been modified and improved over the years. Based on student feedback, the course now includes more hands-on skills groups and shorter lectures. Since the course is now offered at WCMC-Q, we have expanded the clinical scenarios to include emergencies more likely to be seen in the Middle East, such as hyperthermia and hypoglycemia in the Islamic month of fasting, Ramadan.

The disaster-management workshop (Appendix I) is primarily used at WCMC-Q. This workshop, adapted from prior publications,[5,6] utilizes a scenario based on a disastrous fire that took place in a mall in Doha in 2012. Instructors in the US can easily modify this workshop by changing the names of the mall and the meeting participants to simulate a local, more relevant disaster.

The lectures and workshops use the more common acronym of ABC when discussing the management of an ill or injured patient. However, CAB is the acronym and sequence of management recommended in the American Heart Association's guidelines for managing cardiac arrest situations.

Methods

The course entails a morning of lectures (3.5 hours) followed by an afternoon of workshops (3.5 hours). Students attend the morning lectures in the lecture hall and then are guided from room to room based on their group assignments and the rotation schedule (Sample Assignments, Rotation Schedule, Room Labels, Appendix A).

This course can be divided over 2 days, with lectures being given on Day 1 and workshops on Day 2. Course lectures include Introduction and Scene Safety (Appendix B), Vital Signs (Appendix C), Initial Assessment (Appendix D), Secondary Assessment (Appendix E), First Responding Trauma Patient

(Appendix F), and First Responding Medically Ill (Appendix G). The Vital Signs lecture can also be used as a stand-alone lecture. At WCMC-Q, we usually give this lecture several days prior to the course in order to shorten the lecture time on the day of the course.

Course workshops include Airway Skills (Appendix H), Disaster Medicine (Appendix I), Immobilization (Appendix J), and Splinting (Appendix K). The current iteration of the workshops also includes five case scenarios of 15 minutes each, where students have the opportunity to actively manage a simulated emergency. Four of the case scenarios are included in two 30-minute workshops of two cases each: Syncope and Chest Pain (Appendix L) and Seizure and Overdose (Appendix M). The fifth case, Allergies, Anaphylaxis, and Angioedema (Appendix N), is an alternative case that, depending on the course instructors' preference, can replace one of the other cases.

Each case scenario allows students to apply the first-responder algorithm that is emphasized in lectures: assessing responsiveness, assessing the ABCs, calling emergency medical services (EMS), and providing handoff to EMS, in addition to case-specific critical actions. The goal is that repeatedly following the critical basic first-responder algorithm through multiple case scenarios will reinforce this content.

At least one instructor is needed to present all the lectures. The course is usually taught by board-certified/board-eligible emergency physicians and emergency medicine residents at our two campuses. Six instructors are needed for the afternoon, one to facilitate each workshop. Five standardized patients (SPs) are needed, one for each workshop, except for the Disaster Medicine workshop, which does not require an SP. The SPs are usually nonmedical professionals. It is also helpful to have one additional facilitator who can help guide students from room to room and keep time during the afternoon workshops.

Students should be provided with the suggested readings list (see below) several days prior to the course. The readings are not required to prepare for the course but will be helpful to students who are interested in getting more in-depth knowledge of the material covered in the course. The lecturers should be provided with the lecture slides beforehand so they can prepare their delivery. Workshop instructors are also expected to review the lecture slides so that they understand the background knowledge students will be bringing to the workshops.

Detailed instructions for leading the workshop are included in Appendices H-K. Workshop instructors and SPs are expected to review the guidelines for their particular workshop at least 1-2 days prior to the course. Instructors and SPs are also expected to meet for at least 15-20 minutes prior to the workshop to review the guidelines, discuss the SPs' role in the workshop, and give the SPs an opportunity to ask any questions they might have about the case or workshop format. This course is meant to be a formative exercise only. If institutions plan to use this course for summative evaluations, we recommend that additional SP training be developed to provide a more standardized approach to each workshop.

The course ideally takes place in a location that has a large lecture hall with slide-display capabilities adjacent to at least five, preferably six, breakout rooms for the afternoon workshops. If needed, the lecture hall itself can also be used for the sixth workshop.

Materials required for each workshop are included under equipment list section in the workshop guideline associated with each workshop. It is suggested that the equipment for each room be placed in the rooms at least the day prior to the course to ensure punctuality on the day of the course.

Instructors are expected to give students feedback on their performance in real time during the workshops. In order to incorporate a more thorough mechanism for evaluating student performance and retention of course material into the curriculum, we have also developed two single-station OSCEs, previously published on MedEdPORTAL,[7,8] as part of the postcourse activities at WCMC-Q. Course instructors may choose to include either or both of these OSCEs as a follow-up exercise to the course. These OSCEs may also be administered both prior to and after the course to measure outcomes.

Sample Course Schedule

- 8:00 am-8:45 am: introduction to the first responder and scene safety.

- 8:50 am-9:05 am: vital signs.
- 9:10 am-9:40 am: initial assessment.
- 9:45 am-10:00 am: secondary assessment.
- 10:00 am-10:15am: break.
- 10:15 am-10:50 am: first responding to the trauma patient.
- 10:55 am-11:25am: first responding to the medically ill patient.
- 11:30 am-12:00 pm: lunch break.
- 12:00 pm-3:30 pm: workshops.

Suggested Readings for Students

- Boggust, "Prehospital Equipment and Adjuncts."[9]
- Mills and Mills, "Disaster Preparedness and Response."[10]
- Somand and Ward, "Basic Cardiopulmonary Resuscitation in Adults."[11]
- Mechem, "Emergency Medical Services."[12]
- Carlson and Wang, "Noninvasive Airway Management."[13]
- Burns, "Approach to the Patient in Shock."[14]

Results

Since the course's implementation at WCMC in 2002 and at WCMC-Q in 2010, we have had about 850 students take it. Postcourse evaluations are completed annually by students. Students routinely give excellent reviews to the course overall. They consistently respond more positively to the workshops than to the lectures and request that time devoted to lectures be decreased and workshop time be increased. In representative course evaluations from 2011, for example, on a 5-point scale (0 = *poor,* 5 = *very good*), 42% of the students (*n* = 27) rated the lectures a 5, and 50% rated the lectures a 4. For the simulated skill stations, 83% of the students gave a score of 5, and the remaining 17% rated the sessions as a 4. While the strength of evaluations of individual lectures and workshops is also a function of the instructors themselves, representative lecture and workshop evaluation results from 2015 are included in the Table.

Table. First-Responder Course Evaluations, Fall 2015 (*n* = 46)

Session	Lecture Title	Percentage of Students Rating Activity 4 or 5 out of 5
1	Introduction to First Responders and Scene Safety	85
2	Initial and Secondary Assessments	98
3	First Responding to the Trauma Patient	85
4	First Responding to the Medically Ill	98
5	Airway Skills	87
6	Basic Splints, Slings, and Wound Care	87
7	Case Scenarios: Seizure/Anaphylaxis	83
8	Immobilization	96
9	Case Scenarios: Syncope/Chest Pain	87
10	Disaster Medicine	83
11	Vital Signs[a]	87
13	Case Scenario: Overdose[a]	96

[a]Data are from the 2011 course at Weill Cornell Medical College in Qatar.

Students' free-text comments on the course evaluations from 2015 included the following remarks.

Overall Course-Related Comments

- "[It was helpful] to repeat the steps that need to be taken during an emergency and to be told if it's the right step or not."
- "I liked the overall structure—it's helpful. Maybe more hands-on experience."
- "Make sure the instructions in the lectures match the instructions in the workshops."
- "Split the day into two so we can cover more cases. We were also tired by the end of the day."

- “Great day!”
- “Have the course over a two day period instead, giving more time with standardized patients and chance to get hands on experience in the case scenarios.”
- “It was really a great session. I learned a lot.”
- “The language of the doctor was not clear.”
- “Great, interactive and enjoyable experience.”

Airway Skills Workshop

- “"Maybe have more airway models.”
- “We need more time on this station.”
- “Very informative and useful.”
- “Excellent station but we need more time to practice.”
- “The doctor gave us lots of room to practice and his sense of joy lit up the room.”

Case Scenarios Workshops

- “Perhaps [the instructor] should demonstrate first.”
- “[We need] more individual case scenarios. It gets repetitive/boring when 4 people re-do the same case.”

Slings, Splints, and Wound Care Workshops

- “One of the most important things in Qatar, with all the accidents.”
- “Very good hands-on experience.”

Disaster Medicine Workshop

- “Nice insight into how things are organized.”
- “Did not see the relevance.”
- “[This was] a more systematic approach to explaining disaster management.”
- “Useful in understanding what goes on during a disaster and how many people are involved.”

Discussion

The unique experience of our medical school during the September 11 tragedy highlighted the need for a comprehensive course that would introduce preclinical medical students to the basic skills needed to assist in emergency scenarios in the field. Over the past 13 years, this course has developed into an essential part of our preclinical curriculum and has been strengthened due to changes we have made based on student feedback. We have also successfully adapted this course to serve the slightly different needs of students at our campus in WCMC-Q. The two single-station OSCEs previously published on MedEdPORTAL[7,8] function as important adjuncts to this course in evaluating students’ retention of course material, as well as providing students with another chance to review course material, practice their skills, and obtain feedback.

Overall postcourse evaluations are unanimously positive, with students routinely raving that this is one of the most practical courses of the first-year curriculum. This course is, for many students, a first exposure to emergency medicine as a specialty and the launching ground for pursuing further medical school exposure and postgraduate training in this field.

Professional identity formation in medical students describes the enigmatic process of their transformation from students to professionals, from laypersons to physicians, and from individuals to members of a society of healers. Medical schools have adopted several rituals and rites of passage, such as the white-coat ceremony or gatherings to honor cadavers, to instill in students a sense of the gravity of their evolving roles. In fact, realization and acceptance of this new role are not things that occur in a day but constitute a gradual and complex process. Professional identity formation has been described as subset of identity formation, and several theories have been proposed describing the subtle shifts in psyche that are

involved. Early exposure to clinical medicine plays a critical role in contributing to professional identity formation in medical students. We believe that courses like our Introductory Emergency Medicine Clinical Skills Course also play an important role in contributing to professional identity formation in medical students.

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