

Emergency Medical Technician Training During Medical School: Benefits for the Hidden Curriculum

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Abstract

Problem

Medical schools are encouraged to introduce students to clinical experiences early, to integrate biomedical and clinical sciences, and to expose students to interprofessional health providers and teams. One important goal is for students to gain a better understanding of the patients they will care for in the future and how their social and behavioral characteristics may affect care delivery.

Approach

To promote early clinical exposure and biomedical integration, in 2012 the University of South Carolina School of Medicine Greenville incorporated emergency medical technician (EMT)

training into the curriculum. This report describes the program; outlines changes (made after year 1) to improve biomedical integration; and provides a brief analysis and categorization of comments from student reflections to determine whether particular themes, especially related to the hidden curriculum, appeared.

Outcomes

Medical students wrote frequently about EMT-related experiences: 29% of reflections in the charter year (1.2 per student) and 38% of reflections in the second year (1.5 per student) focused on EMT-related experiences. Reflections related to patient care, professionalism, systems-based practice,

and communication/interpersonal skills. The frequency of themes in student reflections may provide insight into a medical program's hidden curriculum. This information may serve to inform curricula that focus on biosocial elements such as professionalism and communication with the goal of enhancing future physicians' tolerance, empathy, and patient-centeredness.

Next Steps

The authors plan to conduct further qualitative analysis of student reflections to iteratively revise curricula to address gaps both in learning and in the differences between the explicit curriculum and actual experiences.

Problem

The University of South Carolina School of Medicine Greenville (USCSOMG), one of the new expansion schools, was established in 2011 and matriculated its first class in 2012. In keeping with the established theories on the primary role of experience in learning processes,¹ new medical schools are challenged to incorporate early clinical experiences and to integrate clinical and biomedical sciences within the curriculum. To accomplish this goal, USCSOMG has incorporated emergency medical technician (EMT) training into students'

first-semester curriculum. This program provides early opportunities to practice clinical skills, exposure to the effects of the social determinants of health, and a chance to appreciate and work on an interprofessional team. Further, the program supports longitudinal learning through a continued EMT experience required throughout students' preclinical years.

The purpose of this Innovation Report is to describe early experiences of the USCSOMG EMT program; to outline changes made (after the charter year) to further integrate the course into the biomedical sciences; to provide a brief analysis and categorization of comments from student reflections to determine whether particular themes, especially related to the hidden curriculum, appeared; and to propose steps for further analysis of the reflections.

Approach

The EMT program at USCSOMG

Throughout the process of developing the curriculum for the new medical school, faculty members, leaders, and program designers understood that clinical

medicine would be incorporated early during the preclinical years. One means of realizing this close integration was for students to complete EMT training.

The EMT curriculum and related educational requirements follow the baseline standards set by the State of South Carolina; however, these standards can be, and in our case *are*, exceeded depending on program goals. Didactic components include understanding basic concepts of anatomy and physiology—along with recognizing not only an EMT's responsibilities and scope of practice but also all attributes of the EMT system of care. Experiential components entail obtaining a patient history and performing a physical examination, including checking vital signs. The course also covers lifesaving skills such as airway management, hemorrhage control, and cardiopulmonary resuscitation. Students receive an introduction to various medical illnesses, traumatic injuries (including information on mechanisms and kinetics), obstetrical issues, and differences in populations relating to extremes of age and those with special needs. The typical EMT course has been augmented at USCSOMG to include

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more in-depth clinical knowledge and references to pathophysiology and diagnostic testing.

To introduce and promote interprofessional awareness, the EMT program concludes with a capstone exercise in partnership with local emergency response agencies including law enforcement, fire services, and emergency medical services. The exercise comprises two scenarios: one simulating a motor vehicle crash with multiple vehicles with trapped occupants, and the other simulating a mass casualty incident. Each student participates in both scenarios working alongside public safety personnel, and debriefing—focused on student performance—occurs at the conclusion of each.

After successful course completion, students take the psychomotor skill and written components of the National Registry of EMTs examination. Following the successful completion of all the required examinations and background check, students become South Carolina certified EMTs. Students must maintain their certification throughout the first two years and complete at least one ambulance shift each month. This longitudinal element of the course provides opportunities for students to continue recognizing factors in the community environment that can negatively or positively affect the delivery of medical care and, via an integrated curriculum, to consider strategies that foster effective learning, improved care delivery, and system change.

Stand-alone program. The charter EMT course was 218 hours, conducted during the first six weeks, and included six module examinations and a final written and practical examination.

Integrated program. After the first class, program directors reviewed the course both to determine feasibility given the projected growth of enrollment and to enhance biomedical integration. The Curriculum Committee recommended integrating the EMT program into the gross anatomy and embryology course, which would extend the EMT component across the full 14 weeks of the first semester. Gross anatomy and embryology seemed to be the most natural fit. Curriculum planners organized class schedules such that while students learned about blunt

and penetrating trauma to the chest and abdomen in EMT training, they engaged in parallel instruction in those anatomical regions in class and in dissection of those sections in the lab. This second iteration of the course added 28 laboratory hours to facilitate more experiential opportunities.

Approach to program evaluation

Findings from a recent study of a similar program at Hofstra North Shore–Long Island Jewish School of Medicine indicate that students have reported increased confidence in patient care and team-building skills.² These key results—based on early integration of the student clinical experience—may be further enhanced by considering additional dimensions of the student experience.

We believe that integrating emerging knowledge of clinical skills and basic science foundations, an understanding of social determinants of health, and the dynamics of team-based care are all enhanced by interaction with the environment of care outside the health system. Thus, we have extended the assessment of learning from the lens of an experiential model into the realm of situated cognition theory, which posits that learning is a function of the environmental context, including active participation and institutional culture.³ Assessing learning from a situated cognition perspective facilitates opportunities for testing innovations in the educational and clinical environment.^{3–5} USCSOMG requires students to write critical reflections (see below), and we believe that analyzing these reflections through a situated cognitive framework extends the assessment of an individual student's learning to, more broadly, a feedback cycle that includes consideration of interactions among students, faculty members, and the environment. To illustrate, those students who choose to focus their reflections on the EMT curriculum recount experiences that suggest impediments or accelerants in the *collective* learning of the group. We believe we can assess the extent to which experiences—extracted as themes from the EMT reflections—influence learning processes, and we can use that information to adjust the curriculum.

As noted, medical students must write a personal reflection on a topic of their own choosing twice each semester. The purpose is for students to consciously examine themselves relative to a meaningful learning experience, to begin to define for themselves their roles as future physicians, and to identify and develop plans for personal development that enhance their competencies.⁶ Student reflections generally include self-assessed learning progress as well as an acknowledgment of knowledge gaps or weaknesses in learning development. Reviewing these student reflections provides faculty members with a way to understand student thoughts about their medical training, including EMT training experiences. That is, reviewing student reflections provides faculty with a glimpse of the “hidden curriculum,” those interactions that integrate the formal learning experience with community and culture.^{7,8} Our preliminary review of these deidentified reflections qualified for exempt status by the institutional review board of the Greenville Healthcare System.

Outcomes

An early outcome of the EMT curriculum and one that indirectly measures the impact the course has on students is the frequency of EMT-related reflections.

There were 53 students in the first class and 54 in the second class. All students successfully completed the EMT course, and all completed the 4 reflection assignments—with the exception of 1 student in the first class who withdrew from the medical school. Forty-two students in the first class (81%) and 52 students in the second class (96%) related at least 1 of their 4 reflections to an EMT experience. Of the 208 total reflections submitted for the year by the first class, 60 (29%, or an average of 1.2 per student) were related to an EMT experience. Of the 216 reflections in the second class, 82 (38%, or an average of 1.5 per student) were primarily related to EMT.

While the frequency of EMT reflections may demonstrate a general impact of the program on the student's medical school experience, a preliminary thematic stratification suggests a meaningful opportunity to systematically assess the hidden curriculum in accounts of students' EMT experiences.^{7,8} In

keeping with the experiential approach, reflections on the EMT experience and the community context can generate transformative feedback cycles by informing future iterations of the curriculum and allowing curriculum planners to increase the alignment of early clinical expectations with the realities of an actual learning health system environment.

The students' comments fell within four broad themes—patient care, professionalism, systems-based practice, and interpersonal and communication skills—all of which align with the Accreditation Council for Graduate Medical Education core competencies.⁹ Here we have provided an excerpt from one student essay, reflecting the Interpersonal and Communication Skills theme, to illustrate student responses.

Patient and provider communication was a common reflection topic. Students discussed providers' inability to effectively manage communication barriers resulting from cultural and/or language differences. Similarly, students understood the importance, especially under critical conditions, of the need to develop improved emotional stability, especially when dealing with death and complex family dynamics. To demonstrate, one student wrote:

My first EMT shift was quite the adventure. From 8 PM on a Friday night to 8 AM that Saturday morning my ambulance did not hold still for more than 10 minutes between calls. While having a busy night may sound exciting to most of my classmates, actually seeing the things I did that night had many more emotions attached to it than the "cool" my classmates assumed. I saw domestic violence, I saw a couple mourning the death of their prematurely delivered baby, and I saw a man get resuscitated after multiple rounds of interventions. I was completely overwhelmed by my experience.

Further content analysis of the reflections may elicit a stronger basis for the learning implications of the EMT program. For example, one student wrote about members of the care team cruelly teasing a confused patient who was taken to the hospital for a psychiatric emergency. Examining such incidents through written reflection provides opportunities for students to reflect on professional behaviors that both exemplify and deviate from best practice. Further investigating themes of professionalism

can lead not only to open and productive discussions among faculty and students regarding professional modeling but also to opportunities for testing educational approaches and tools that may help students survive and thrive as professionals and health system leaders.

Tracking competency-based reflection themes longitudinally and linking them to variation in student learning outcomes, gaps between explicit curricula and the learning system culture, and opportunities for faculty development provides a means to address emerging challenges. Medical school leaders and curriculum planners can use the data from reflections to implement innovative curricula that reflect the dynamic environments encountered and influenced by future physicians.

Next Steps

Any clinically based course or activity, especially at the beginning of a medical education career, is momentous to students. Patient contact time while riding on the ambulance provides a unique and, for many, first-time opportunity to witness patients' home environments. During the EMT experience, students interact with patients from both affluent and poverty-stricken neighborhoods, and they are exposed to medical professionalism, stress and fatigue, and the complexity of the health system.

In the next phase of the project, we will formally categorize observations as positive or negative across the core competencies in an iterative process of independent stratification and group discussion until we achieve consensus. Once we have comprehensively categorized the reflections, we will assess subthemes in each competency using the same approach. We will then invite an independent faculty reviewer to assess the team's coding analysis. Using the findings from this additional analysis, especially of the subthemes, we hope both to further assess influences on the learner, learning environment, and health system via the situated cognition framework and to develop approaches to test learning development concepts elicited from the reflection themes. Ultimately, we hope to gain insight into students' perspective of the learning experience and to iteratively improve

the curriculum on the basis of these insights. We hope that as students progress in their medical career, they will not become critical or cynical when team dynamics are challenging, or when one of their patients misses a clinic appointment or fails to renew a prescription. Perhaps students will reflect back on their early EMT ambulance experiences, remembering a single parent caring for multiple children and simply trying to survive. Understanding the difficulties often inherent in the patient environment may make lifelong impressions on our future physicians and offers innovative opportunities for integrating clinical excellence with patient- and family-centered care.

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