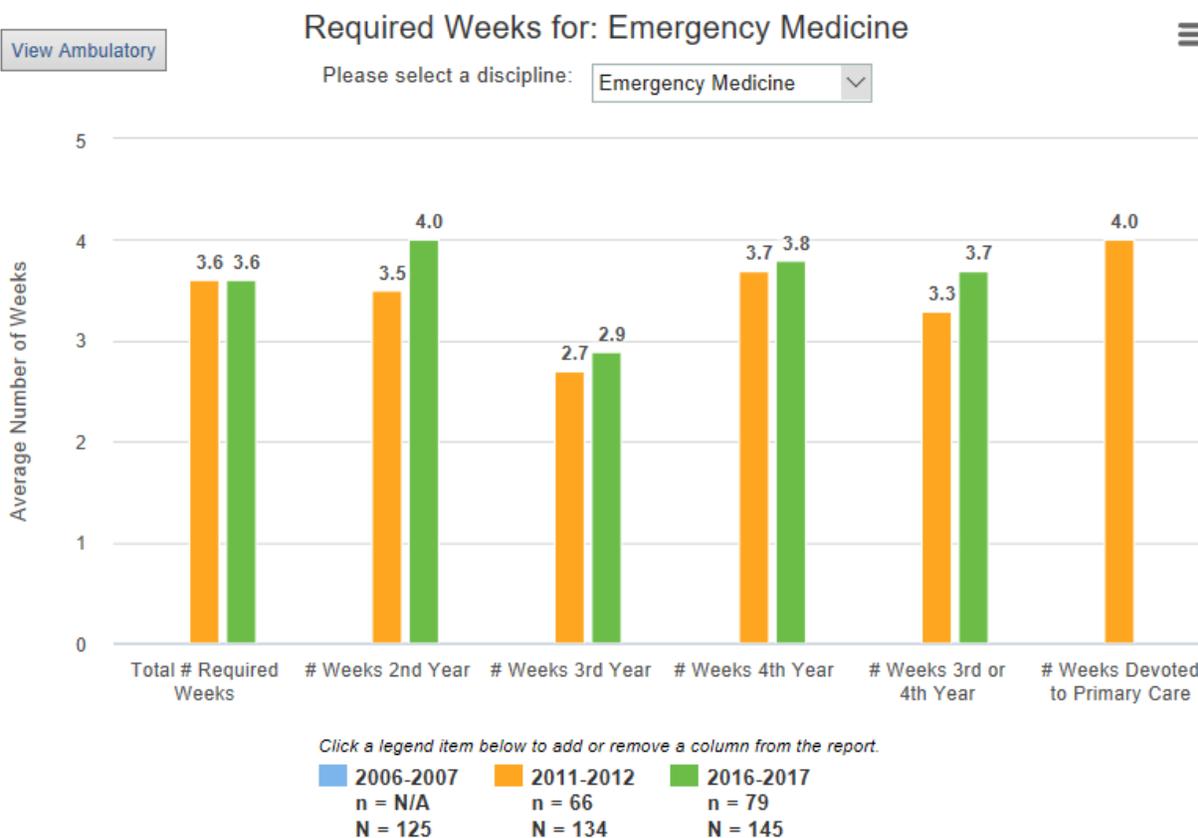


Curriculum Inventory in Context

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Early Patient Care Experience in the Emergency Department: is it Valuable?



More than 140 million patients are seen in emergency departments (EDs) in the United States each year.¹ Even though only 4.5% of physicians practice Emergency Medicine (EM)², nearly all physicians and their patients will have contact with the ED, so it is important for students to have exposure to patients in that environment. We will discuss the current state of EM education and then the early integration of EM and exposure to the ED into the curriculum at Michigan State University College of Human Medicine (MSU CHM).

Why do students need exposure to the ED?

It is important to involve students in the ED because understanding how to assess and provide care for initially undifferentiated patients broadens their knowledge and skill base. All medical students should possess the ability to develop a patient complaint-based differential diagnosis, differentiate “sick vs not sick”, perform a presenting complaint focused history and physical exam, and provide basic life-saving care by the time of graduation. These basic skills are

applicable to the majority of medical disciplines. It is an ideal opportunity to integrate their clinical knowledge and clinical skills.

When does teaching take place?

Based on the graph shown above and information collected in the curriculum report titled “Required Weeks for Emergency Medicine,” 78 of the 145 medical schools responding reported having a required EM rotation (54%). Among those 78 schools, 49 (63%) have rotations in the 4th year, 14 (18%) are in the 3rd year, 18 (23%) offer EM during either the 3rd or 4th year, and only 1(1%) had an ED-based rotation in the 2nd year. The typical length of these rotations range from 2 to 4 weeks. Traditionally, EM has been offered during the M4 year, but M3 offerings are becoming more common.

According to additional information acquired from the Society for Emergency Medicine website, 30% are required rotations, 60% elective, and 10% are unclear.³ Therefore, some students may receive little to no EM exposure during their training.

Topics and teaching modalities

The Clerkship Directors in Emergency Medicine (CDEM) has developed a curriculum for both M3 and M4 rotations.⁴ Some of the “must teach” topics for the M3 curriculum include aspects of care that every graduating medical student should arguably know. The topics lend themselves to many types of patient interactions and can be taught with increasing degrees of complexity and autonomy as the student progresses through training. The M4 curriculum is problem and diagnosis focused. A 2014 study found that 80% of students completing a 4 week M4 EM rotation had exposure to at least 8 of 10 core presenting complaints (see Table 1; column 2).⁵

Table 1. Overview of examples of the “must teach” topics in M3 and the Core Presenting Complaints in M4 as developed by the Clerkship Directors in Emergency Medicine

CDEM Examples of Topics M3	CDEM Core Presenting Complaints M4
Approach to the Undifferentiated Patient	Abdominal Pain
Performing Complaint-Directed History and Physical Examination	Altered Mental Status
Developing a Case-Specific Differential Diagnosis	Cardiac Arrest
Basic Life Support Techniques	Chest Pain
Stabilization of the Acutely Ill Patient	Gastrointestinal Bleeding
Developing a Plan of Action Based on Vital Signs (sick vs not sick)	Headache
Interacting with Consultants	Poisoning
Effective and Safe Patient Hand-Offs	Respiratory Distress
Differences Between the ED, the Office and Inpatient Settings	Shock
	Trauma

As in other aspects of medical student education, EM uses multiple instructional modalities.^{6,7,8,9,10} Given the opportunity to perform procedural skills in the ED setting, simulation is frequently employed. A Canadian study of student perceptions on what works in

an EM clerkship found that students preferred clinical shifts and advanced cardiac life support training to other teaching modalities.¹¹ Many clerkships provide instruction through didactics, podcasts, online pre-learning, and boot camps. Using multiple modalities allows for repetition, exposure to infrequently seen patient scenarios (such as cardiac arrest), development of psychomotor skills, and the opportunity to have their basic science knowledge base applied to different patient scenarios.

Early integration of EM in medical school curricula

Like many medical schools that have integrated early clinical exposure into their curricula, MSU CHM developed and implemented a M2 rotation consisting of 4 weeks of EM. Exposure to undifferentiated patients presenting to the ED provided each student opportunities to perform presenting complaint-focused interviews and physical examinations, to develop basic differential diagnoses, and to consider management options. Given the importance of appropriate preparation for the Step 1 exam which is typically taken at the end of the M2 year, the EM curriculum includes review of relevant basic science concepts that are applicable to ED patient care (See table 2).

A group of chief complaints and concerns (C3) provide the foundation for the MSU CHM M2 EM curriculum.¹² Many these are ideally suited for EM, including their relationship to Step 1 topics.

Table 2. Examples of Step 1 topics covered in Emergency Medicine Chief Complaints and Concerns at MSU CHM

Chief Complaints and Concerns Topics	Examples of Step 1 concepts
Lacerations	Hemostasis Wound healing
Bites	Bacteriology of animal bites Antibiotic choices
Burns	Wound infections
Rabies	Pathology of rabies infection Immunology of rabies vaccination
Shortness of breath	V/Q mismatch Virology of common respiratory infections Pharmacology of drugs to treat asthma
Toxicology	Physiology of toxin response Antidotes
Shock	Physiologic response to shock Causes and treatment of sepsis Immunology of anaphylaxis
Fractures	Bone healing Anatomy of bones and joints

Student educational programming included supervised ED shifts, small group didactics, simulation and required readings. Low preceptor to student ratios are critical to skill development and the appropriate application of the necessary basic science concepts to ED patient care. ED shifts have one preceptor to 3 students, didactic small groups of 16 are led by one preceptor.

In our experience, students have indicated learning about a wide variety of topics with an emphasis on those that reflect the AAMC's Core Entrustable Professional Activities such as developing a differential diagnosis, performing a history and physical, oral patient presentations, and collaborating as part of an inter-professional team.¹³ One of the students wrote: *"I found a way to strategically structure and organize my ideas about what was going on with the patients from the most severe complications to the least severe"*. Another wrote: *"I learned the importance of emergency care teams working together seamlessly and efficiently"*. MSU CHM students that have an interest in pursuing EM residency training are encouraged to enroll in EM M3 or M4 elective rotations.

Currently, EM rotations at US medical schools occur during the M3 and M4 years, however, we posit that the ED is an ideal setting for learning basic clinical skills at the M2 level. This early exposure to a variety of undifferentiated patients having different levels of acuity should help to prepare all students for residency and a career in medicine, regardless of discipline.

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