Disaster and Emergency Management Online Training during the Coronavirus Pandemic: A Model for Teaching Emergency Management Skills to Medical Students

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CASE STUDY

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ABSTRACT

As the SARS-CoV-2 virus spread, medical students were pulled from hospitals, clinics, doctor's offices, or their required rotations. This meant many students would not finish meeting all the requirements of mandatory rotations and skills needed for graduation. The need to fulfill those requirements necessitated developing new ways for the students to learn these missed skills. The need for physicians to work side-by-side with emergency managers and other public health personnel meant that new understanding of how the physician fits into the emergency management and public health preparedness framework was needed. This article details how a series of online modules was developed for fourth year medical students who missed their onsite mandatory emergency medicine rotation and the importance for this information to be included within the medical school curriculum.

Key words: Disasters, medical education, curriculum, medical students, disaster response, disaster management, public health response.

INTRODUCTION

Medical students interested in emergency medicine make up a small percentage of the medical student population. In the Dr. Kiran C. Patel College of Osteopathic Medicine (KP COM) at Nova Southeastern University, a concurrent master's degree is highly encouraged. Approximately 35% of these medical students graduate with a concurrent master's degree in public health, nutrition, biomedical informatics, medical education, or disaster and emergency management. Approximately two to three D.O. students per year earn their Master of Science in Disaster and Emergency Management. Because the Disaster and Emergency Management Program (DEM) is located within the osteopathic medical school, the master's degree has a number of courses with a public health focus, including preparedness and response to crises such as a pandemic, epidemiology of disasters, healthcare emergency management, or handling situations such as preparing for the potential of the Ebola virus within the United States as we saw in 2014-15. The current COVID-19 pandemic

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has shown medical personnel and those in emergency management just how important it is that practitioners in these disciplines learn to work together.

The DEM program has a concentration in public health to facilitate that learning process and help both the medical students, and others getting the master's degree, understand the important intersection of these two occupations, especially when a public health emergency occurs. The issue becomes the lack of formal education or training in medical school or residency to help physicians understand not only their role in such a crisis, but how to work alongside those in emergency management who will be overseeing, or managing, such a crisis. To complicate matters, medical students in their final weeks of training were pulled from their on-site rotations in order to keep them safe, causing some of them to miss their mandatory emergency medicine rotation needed for graduation requirements. To overcome this deficit, a series of training modules were developed to help these students understand their role in a public health crisis as a physician.

MATERIALS & METHODS

Faculty from the Disaster and Emergency Management department met with the Assistant Dean of Clinical Education to determine what type of content would best suit the needs of the accrediting body for osteopathic medical programs. The content would allow these particular students to complete their emergency medicine rotation requirements which were not able to be done in person. Considering the effects of the pandemic, the Assistant Dean thought information about responding to a pandemic or public health emergency, not necessarily specific to the COVID-19 pandemic, would work well. The information would help the medical students understand some of the "non-medical" requirements of hospitals and of physicians that occur when there is a disaster or public health crisis. Disaster and Emergency Management faculty developed 10 modules that would cover topics to help the students

understand the nature of a public health crisis as well as their role in such a crisis. The topics covered in the modules ranged from the concept of what is a public health crisis to the altered standards of care that may occur during such times. Each module included readings along with an assignment for submission and grading. Some assignments included a discussion question that required an original post and a response to another classmate's post. Other assignments included a reflection paper about medical, environmental, or age-related inequities that can occur before, during, and after a disaster such as Hurricane Katrina. The overall goal was to help medical students understand their role within the public health response framework and to see how they would work alongside others during such a response.

RESULTS

The COVID-19 pandemic, which initially had no pharmaceutical intervention, treatment, or vaccine, posed new challenges in preparedness and training. This was especially true when compared to an influenza pandemic, a disease well researched and understood, which has some treatment options, is monitored by the World Health Organization for potential pandemic strains so vaccine development can begin and is taught in all medical schools. With courses such as Healthcare Emergency Management, Emergency Preparedness Public Policy and Law, Psychosocial Dimensions of Disaster, and Public Health Issues in Disaster Preparedness, the administration in KP COM realized that the faculty for the Disaster and Emergency Management program was well positioned to develop online modules to address information needed for medical students related to pandemic preparedness and response. These modules would be for students who needed additional requirements for graduation, and especially for those lacking time and experience in their emergency medicine rotations.

More than one of our physician graduates who have gone on to work in various medical settings have related that many of their colleagues know little or nothing about emergency preparedness, regardless of their medical specialty, and most are unaware of the plans their hospital has in place for such an event, and no understanding of their role should such an event occur. The modules that were developed for the KP COM fourth year students were focused on helping these graduating medical students to go beyond the science and medical knowledge they learned in their years of medical training, and to think beyond the patient - to think at the institutional and community level. It is important that they learn to think about how they, as physicians, fit into the bigger picture of this pandemic or into any other public health crisis as well as how they can be called upon for many types of disasters or emergencies and their roles when such an event occurs.

The Training Modules

The modules that were developed take the student through the process of understanding what constitutes a public health crisis, their role in this or any type of disaster as a medical professional, the importance of information sharing, and the legal and mental health issues to consider, both for themselves as a provider, as well as for the patient/survivor, and finally to understanding how they, as physicians, fit into the overall response to all types of emergencies and disasters.

1. An Overview of Public Health Preparedness and Response [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

2. An Overview of Disasters and Disaster Response [11, 12]

3. Vulnerable Populations in a Disaster [13, 14, 15]

4. Legal Issues in Public Health Emergency Preparedness [1, 5, 16]

5. Standards of Care [16, 17, 18, 19]

6. Healthcare Emergency Management [20]

7. Multiagency Coordination and Information Sharing [11]

8. Mental Health Wellness [21, 22, 23, 24, 25]

9. Points of Distribution [26]

10. Leadership for the Future of Public Health Preparedness [1]

DISCUSSION

The knowledge that each of these future physicians were exposed to, and learned through the modules listed, will help them mitigate, prepare for, respond to, and recover from potential public health disasters and emergencies. Although it is recommended that future physicians receive disaster and emergency management training in public health, as well as in their specialties, there is currently no formalized or standardized disaster and emergency management training for physicians in the United States [27]. In contrast, similar public health disaster training is required for those in other disciplines such as law enforcement, emergency medical services, and other first response personnel.

There are few areas in this country, or the world, that don't suffer from some type of disaster, and all experience emergencies, so wherever a physician chooses to practice, it is likely that most physicians will be called upon to help in providing medical care to emergency or disaster victims and during large public health crises such as the Ebola epidemic, and preparing for the possibility that it may come to the U.S., and the COVID-19 pandemic. Physicians will likely be called upon, at some point during their career, within a hospital setting or in the field, regardless of medical specialty, for some level of public health, disaster, or emergency response. Working with medical students and physicians, it is well known that very few know, or understand, their role in a large-scale emergency or disaster or the plans for these events at the hospital or practice where they work. It is critical that physicians be trained in these areas, and that they can apply their knowledge and experience gained through their education in disaster preparedness and emergency management into their practice.

Physicians from all specialty areas need to understand what their role will be, how to prepare, and

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how to become an active leader in emergency management drills and exercises in their hospitals, medical practices, and communities. It is important for all medical personnel to know and understand the emergency plans for the facility in which they practice whether it is a hospital, large or small medical practice or clinic, or their own private practice. Understanding how to approach such incidents, whether they are finite such as a tornado, or on-going such as the COVID-19 pandemic, allows the physician to continue treating patients and protect themselves and any personnel within the facility or practice. Many disasters are considered "no notice" events such as tornados, a mass shooting, or a bombing, while others, such as a hurricane or pandemic allow for preparation. In all types of disasters, planning and mitigation of the impact are important, and the modules prepared for the KP COM medical students allowed them to learn some of these lessons and the importance of their role in the preparedness and planning process and how they can be a part of the response when the time comes.

There are, however, limitations in implementing this information within an existing medical school curriculum. First, finding time within the already packed curriculum. With medical knowledge continuing to increase and the amount of information a medical student today needs to learn leaves little or no time to include additional content. Second, administrators and students are resistant to include, or put their effort into, something that does not directly relate to learning and understanding medical treatments, specific medical skills, or patient care. Part of this resistance at the administrative level includes their lack of understanding of their own role or importance as physicians in such responses and how they can be an integral part of the planning and preparedness steps prior to a disaster or public health crisis. Third, many medical schools may not have the faculty with expertise in the areas needed for such a curriculum, such as the legal issues that surround altered states of care during disaster or emergency situations, healthcare emergency

management and how conditions change within a medical setting during such incidents. Many colleges and universities have public health programs, but public health would only address a small portion of the types of incidents and information that should be included in this type of curriculum. Understanding their role as a physician within a large-scale incident which involves numerous other professions, such as fire, law enforcement, public works, engineers, and others, would not be covered by the standard public health curriculum, so specialty faculty with expertise in these areas would be needed. However, this curriculum can be taught as standalone online modules which can be done as part of another course, or courses, or as part of a rotation in emergency medicine, and faculty from other disciplines, which may not necessarily be part of the medical school, would be available to work with students when problems or questions arise.

CONCLUSIONS

All emergencies and disasters are managed through the Incident Command System (ICS) which remains consistent in structure and operation regardless of the type of incident or who is part of the response. Physicians must fully comprehend their role in public health preparedness and response, how they will work within the ICS structure alongside other emergency responders, and how to work with vulnerable populations as well as other emergency management and public health officials during an emergency, be it a short-term incident, such as a mass shooting, or an on-going event like a pandemic. It is also important that they understand the potential legal ramifications of practicing as a physician giving medical treatment in altered environments which may not meet the usual standards of care. They must know how physicians and other emergency personnel coordinate prior to, during, and after an emergency or disaster. There is a new realization

as we approach the "new normal," that medical professionals must become more involved in disaster planning and response, for both no-notice and notice events. This realization will hopefully bring about new and important changes from leaders within the field of medicine, as well as academic medicine. Including preparedness training in the medical curriculum should be considered moving forward as disasters and emergencies continue to increase and new and novel pathogens entering the human population have increased over the past several years. The medical students in the Dr. Kiran C. Patel College of Osteopathic Medicine are positioned to transform the medical professional and a leader when a disaster or emergency occurs.

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