

Capstone for Impact Submission | GY2021

Project Title: Transforming a curriculum to put medical students on the frontline of public health

Student Name(s): Sarah Contreras-Ortiz

Advisor Names(s): Dr. Brent Williams

If this project can be continued by another UMMS student, please include your contact information or any other details you would like to share here: smcontre@umich.edu

Summary:

In the wake of the novel coronavirus COVID-19, medical students were faced with the unique situation of navigating the line between our sense of duty to our patients (which for many of us is one of the leading reasons why we chose to go into medicine) and a sense of responsibility to our community in helping to mitigate the risk of further spread. Especially for those of us who have had clinical exposure, we found ourselves asking how we can put the skills we've just started developing to use in a responsible way. How can we complement the work being done to fight this pandemic without exacerbating the emerging challenges we are seeing (i.e. resource disparities)? One solution I have identified is to work (remotely) alongside the Washtenaw County Health Department (WCHD) public health nurses, epidemiologists, and environmental health staff to perform case investigations, using our clinical reasoning skills and experience to inform the implementation of CDC guidelines for initiating and ending patient isolations to help keep our communities safe. To do this, I would use David Kern's framework for creating medical education curriculum to transform the existing WCHD course to meet this need.

Methodology:

The following steps were outlined by Kern et al as part of their six-step approach to creating a curriculum:

1. Problem Identification & Needs Assessment

Case investigations and contact tracings have been identified as two of the critical strategies of the public health effort to mitigate further spread of the novel coronavirus COVID-19. Contact tracing is the process of following up with individuals who have been exposed to a person who has tested positive with COVID-19 and monitoring for a certain period of time for the development of symptoms. Case investigation is the process of completing a detailed interview of an individual who has tested positive to understand symptomology, medical history, and social history in order to apply CDC guidelines for appropriate isolation and quarantine precautions, monitor the patient's symptoms, advise on symptom management, and discontinue isolation and quarantine periods. Despite the importance of these measures, the local health departments that are responsible for implementing and coordinating these efforts are understaffed due to a long history of underfunding.

As the state of Michigan begins planning to reopen, the National Association of County and City Health Officials estimates that each state will require 30 workers per 100,000 residents to adequately perform contact tracing calls and case investigations to mitigate the potential for further spread.¹ In order to meet this

need, the Washtenaw County Health Department is offering third year medical students the opportunity to be a member of their Emergency Response Team and utilize their vital medical and public health skills to perform case investigations.

2. Targeted Needs Assessment

This rotation will provide a dynamic learning experience by incorporating students in the continually evolving local response to the global pandemic. More than a service-learning experience, students will be responsible for a case load of their own patients. They will review case clinical information, current case symptoms, identify contacts during infectious period and refer individuals to the contact tracing team, connect cases with community resources, and in consultation with the WCHD clinical team determine when to discontinue isolation and quarantine precautions. Students will also take charge in educating themselves and their peers on updates regarding CDC guidelines, corresponding literature, and medical topics related to case investigations via once weekly seminars.

3. Goals & Objectives

By the end of the rotation, students will be able to:

1. Understand the role of local health departments (LHD) in a pandemic response.
2. Critically examine the factors involved in determining and addressing public health priorities for LHD within the context of a pandemic.
3. Apply principles of population health management to a public health problem.
4. Utilize clinical reasoning skills to interpret, adapt, and apply CDC guidance for initiating and discontinuation of isolation and quarantine precautions.
5. Understand and describe the disproportionate effects of a global pandemic to local communities.

4. Educational Strategies

As part of this course, medical students will receive education on the following content areas: clinical manifestations and epidemiology, CDC guidelines, the impact of the pandemic with respect to racial disparities and at-risk populations, case management, COVID vaccine development and distribution, and interprofessional approaches to addressing the pandemic.

Students will have the opportunity to learn about these topics via weekly seminars (during which students find articles and lead a discussion amongst their peers), performing case investigations, attending the WCHD Emergency Response team meetings and the MI Preventative Medicine COCA calls, and engaging in quality improvement initiatives. The goal of this course is that as the pandemic continues and evolves and new topics emerge, that students will be empowered within their role to develop new educational resources for students that come after them. So far, students have taken the initiative to create educational resources for new volunteers and academic videos for the purpose of “Continuing COVID Education” or CCE.

5. Implementation

To implement this course, I worked with Dr. Brent Williams to transform the existing WCHD elective in such a way that would allow any enrolled students to gain clinical experience performing case investigations as well as any projects that may arise out of either opportunity or need as the WCHD’s operations continually develop to address the needs of Washtenaw County residents throughout this pandemic. A course syllabus was created that outlined student responsibilities and the aforementioned goals of the rotation. Orientation materials were created that gave enrolled students an overview of the WCHD, defining contact tracing v case investigations, how to perform case investigations, CDC guidelines for initiating and ending isolation and quarantine precautions, as well as logistics for the course (i.e. IT, network

access, etc.). Once the course starts, students are under the supervision of the WCHD Medical Director Dr. Juan Marquez.

6. Evaluation & Feedback

The students enrolled in this course are given two surveys to complete. The first is a pre-course survey that, when compared to the second (or post-course) survey, is used to assess qualitative student development. The post-course survey additionally asks students to reflect on their time with the WCHD and provide feedback on how to make further improvements in the course. The specific questions within these surveys are provided below.

Pre-Course Survey Questions

- Paragraph
 - Why were you interested in signing up for the WCHD COVID Case Investigation Course? What about the course appealed to you?
 - What are you hoping to learn from this course? Are there any additional skills you are hoping to develop? If so, please list them.
- Rate from 1-5 (where 1 is little or not at all and 5 is very)
 - On a scale from 1 -5, how well would you say you are aware of the clinical manifestations, epidemiology, and progression of COVID-19?
 - On a scale from 1 - 5, how confident do you feel managing patients positive with COVID-19 remotely?
 - On a scale from 1 -5, how well would you say you are aware of the CDC's guidelines for initiating and discontinuing isolation and quarantine precautions?

Post-Course Survey Questions

- Paragraph
 - Please review your copy of your responses to the pre-course survey. Would you say that you met the goals you had (i.e. what you wanted to learn) at the start of this course? If not, what could we have done differently to help you achieve these goals?
 - How many cases were you assigned during the elective?
 - Do you feel that you were adequately prepared for performing case investigations? Is there anything we should have done differently?
 - Do you feel that you had adequate support during the elective to perform your responsibilities either from the Nursing Coordinator, Medical Director, or other WCHD staff? If not, please describe in further detail.
 - What, if anything, did you learn from your interactions with patients while completing case investigations?
 - Do you have any other feedback that may help us improve this course?
- Rate from 1-5 (where 1 is little or not at all and 5 is very)
 - On a scale from 1 -5, how well would you say you are aware of the clinical manifestations, epidemiology, and progression of COVID-19?
 - On a scale from 1 - 5, how confident do you feel managing patients positive with COVID-19 remotely?
 - On a scale from 1 -5, how well would you say you are aware of the CDC's guidelines for initiating and discontinuing isolation and quarantine precautions?

The students are evaluated using the standard University of Michigan Medical School clinical student evaluation surveys which are completed at minimum by Dr. Marquez.

Results:

There have been 4 students that have been enrolled in the course so far. All students that completed the surveys reported at minimum increase in familiarity or mastery (from a 4 to a 5) of overall knowledge (clinical manifestations, epidemiology, and progression) of COVID-19. In addition, they reported an increase from a 3 to a 5 of ability to manage COVID patients remotely as well as initiating and discontinuing isolation and quarantine precautions. Most exciting is that each student has been able to make their own mark on the course. They've helped to create additional onboarding and educational resources as well as they've started a series of "Continuing COVID Education" projects which they've coined CCE.

Conclusion:

The aim of this project was to provide medical students with a meaningful opportunity to experience and be a part of the public health effort to manage the pandemic and prevent further spread of the virus within their own community. During this time, the WCHD dramatically overhauled its operations – shifting nearly all available resources to address the growing number of active cases and exposures. The existing WCHD elective did not give medical students the ability to take part in the newly forming roles within the WCHD. By creating this course, we have allowed students to gain immensely valuable clinical experience of managing COVID patients remotely as well as a obtain unparalleled exposure to the inner workings of a public health department. The students who have taken part in the course thus far have expressed that their time with the WCHD was meaningful and allowed them to combat the pandemic unlike any other experience they've had so far. As the COVID pandemic continues, I anticipate additional medical students joining the WCHD in 2021. I look forward to how their roles and responsibilities will continue to develop and their impact on the pandemic and their community.

Reflection/Impact Statement:

I believe that medical students and community members are beneficiaries of this CFI project. Medical students are gaining unparalleled hands-on clinical experience to mitigate the reach and spread of this virus – not just manage patients that they may see in the inpatient setting. The community benefits from having uniquely skilled and trained medical "providers" to perform these case investigations in which they will manage their symptoms at home. As the course continues, the WCHD Medical Director and future enrolled students can work toward modifying their roles as needed by the community. If any students hope to use this project as a branching point for creating additional electives that will meet a need in their community, I recommend that they thoughtfully approach the six steps to creating a curriculum to ensure medical student learning.

Sources

1. "National Association of County and City Health Officials' Position Statement on Public Health Capacity for COVID-19 Contact Tracing Surge." National Association of County and City Health Officials, 16 Apr. 2020, naccho.org.
2. Thomas, Patricia A, et al. "Overview: A Six-Step Approach to Curriculum Development." Curriculum Development for Medical Education: a Six-Step Approach, by David E. Kern, Johns Hopkins Univ. Press, 1998, pp. 4–5.