

Capstone for Impact Submission | GY2020

Project Title: DoT Interdisciplinary Medicine Day

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Branch: Systems & Hospital-Based Care

Path of Excellence: Science of Learning and Teaching

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:

Yes – will be continued annually by Doctors of Tomorrow leadership members as part of the DoT Rising Curriculum. Please contact Tatum Zurawski (tzurawsk@umich.edu / zurawskitatum@gmail.com / (586) 871-6344)

Summary:

The Doctors of Tomorrow (DoT) program inspires and prepares high school students from underrepresented communities to successfully pursue careers in health care in order to increase diversity among medical professionals. Our DoT curriculum currently lacks exposure to multidisciplinary medicine. The goal of this project was to create an annual event that introduces the concept of interdisciplinary medicine and other members of a health care team *besides* physicians. These high school students have no exposure to the medical field and are excited and passionate about joining the DoT program and getting their feet in the door toward becoming doctors. However, many have no idea about what it takes to make a health care team run smoothly, including other career choices that they've never considered:

- Nurse
- Nurse Practitioner
- Certified Registered Nurse Anesthetist
- Pharmacist
- Dietitian
- Physical Therapist
- Occupational Therapist
- Respiratory Therapist
- Social Worker
- Speech Language Pathologist
- Ultrasound Technician
- Case Manager

A pilot curriculum was developed to host a day where students brainstorm all the aspects of a patient's hospital stay and all team members that collaborate to deliver comprehensive patient care and help the system run smoothly. The day began with a fun teamwork activity to set the stage for the remainder of the day's "team" theme. We then encouraged the students to get engaged in a simulation where they discuss a patient's hospital stay and all the different health professionals that one patient may interact with in some capacity. The goal was to introduce them to the complexity of interdisciplinary medicine. Following the discussion-based simulation, the students took part in a mini "career fair" where they met and learned from individuals from each of these health care fields. A survey was completed at the beginning and end of the day to gather some data about DoT students' knowledge of and interest in various health care careers. In addition, a search of primary literature was performed to learn about what research already exists regarding underrepresented minorities in various roles within the health care team. After completing a successful pilot "Interdisciplinary Medicine Day" in March 2019, our team will implement this event into the curriculum for our DoT Rising program for years to come.

Methodology:

Logistics: The first step toward hosting this event was to design a timeline and brainstorm which data I was interested in collecting. At the same time, I had to gauge interest in this event from the DoT students by communicating with the faculty advisor at Cass Tech. The faculty advisor at Cass Tech helped to coordinate permission slips and scheduling of the event on a date that worked for both medical students and high school students. Since the event would include a career fair with Michigan Medicine health care professionals, it was best to host the event at the University of Michigan Medical School in the Taubman Health Sciences Library. A University of Michigan bus was rented out for transportation of students back and forth from Cass Tech. Attendance to the event was limited by number of spaces on the bus, 30 plus a chaperone; thus, a sign-up was made available for 10th-12th graders at Cass Tech in the DoT Rising program on a first-come first-serve basis. The event was scheduled for 9 am until 2 pm on a Saturday morning so that student would not have to miss additional school and health care professionals may have a better chance at attending the career fair in the afternoon. A budget was arranged with the DoT program to afford supplies, morning snacks, a full lunch, transportation, and gift cards for health care volunteers. The final cost of the event was approximately \$1,100 and entirely funded by the general DoT fund that is largely supported by donations. Supplies for the event included 3 Jenga® games for the opening teamwork activity, pens, markers, tape, stapler, printed pre/post-surveys, printed prompts for the discussion simulation, extra paper for note-taking during the career fair, signs for health care career fair tables, thank you cards, etc.

Volunteers: Health care professionals from varying fields were sought after to volunteer during the career fair portion of the Interdisciplinary Day. An email template seeking health care volunteers was designed for distribution. I reached out to personal contacts who are known health care professionals in various careers, to faculty advisors to ask for assistance with contacting additional professionals, and to various department contacts (whose information was found online) to determine the appropriate contact within the health care system for seeking volunteers. Once volunteers were identified (12 total), regular communication was maintained via email regarding logistics for the event, objectives for the career fair, and suggested discussion topics for conversation with students. Volunteers were asked to attend for 1.5 hours during the designated career fair portion of the event in the afternoon. All volunteers were offered lunch and a \$25 gift card for their time and willingness to participate. After the event day concluded, all volunteers were contacted to give thanks and ask for any feedback from the event. In addition to health care volunteers, members of the Doctors of Tomorrow leadership team were asked to volunteer their time to help facilitate the event. A total of 5 leadership members, including myself, assisted with the event in some capacity. Leadership members were most involved during the discussion-based simulation in which they helped guide the students during their brainstorming.

Curriculum Planning & Objectives: A draft of the event schedule was developed after brainstorming objectives for the event. Proposed objectives are as follows:

1. Determine the extent to which the Doctors of Tomorrow students, representatives of the underrepresented minority population, were familiar with various careers in health care and interested in pursuing these careers.
2. Define interdisciplinary medicine.
3. Identify key components of teamwork.
4. Identify benefits of interdisciplinary medicine and the key components that contribute to success while practicing this model of medicine.
5. Describe several health care professions that work together to deliver patient care in the hospital setting.

A meeting was held between myself and my CFI advisor to receive feedback about the objectives and event scheduling. Once the schedule was confirmed, volunteers, logistics, and curricular planning began in November 2018. Curricular resources that were developed include introductory PowerPoint, pre-/post-surveys (discussed below), teamwork activity, discussion-based simulation prompts, debrief questions and themes, and discussion topics for health care volunteers. All curricular resources are attached in the appendix. The introductory PowerPoint was utilized throughout the event as a platform for the event's agenda. The teamwork activity, "Sneak Peak", was chosen after exploring teamwork games for teenagers online. The Sneak Peak activity was chosen for its ability to highlight the themes of teamwork, communication, flexibility, accountability, and efficacy with each new round of the game. Once the students identified key components of teamwork, we transitioned to the discussion-based simulation. Both an adult and pediatric medicine prompt were developed to highlight the varying health care fields that may be needed depending on patient population. Each prompt scripted a clinical scenario of a patient admission with details about the patient which would suggest involvement of particular health care professionals. Discussion questions were designed to guide the high school students to think about patients' needs and what health care field helps with those needs. DoT leaders helped to facilitate discussion and debriefing. Debrief was designed to inform students about the realities of interdisciplinary medicine in the hospital and ask students make connections between what they learned from "Sneak Peak" to the discussion-based simulation activities. Finally, I supplied health care volunteers with the example questions below:

1. What do you do (what is your job description)?
2. How do you interact with the health care team in the hospital setting?
3. What educational pathway did you take to get your job? / What level of education is required?
4. How did you discover this career?
5. What makes you passionate about your job? What inspires you to go to work every day?

The above questions provided context toward the level of knowledge that the DoT students may have about health care careers. They also provided discussion topics for volunteers just in case students did not have their own questions.

Surveys: A pre- and post-survey was designed for this pilot event in order to determine the extent to which the DoT students, representatives of the underrepresented minority population, were familiar with various careers in health care and interested in learning about or pursuing these careers. I collaborated with Gurjit Sandhu, PhD in the Department of Surgery & Learning Health Sciences, and Niki Matusko, senior statistician, to develop a pre-/post-survey. A small-scale validation of the surveys was performed by allowing six 9th grade DoT students to take the surveys, ask questions, and give feedback. Data collected from the surveys includes demographics (gender, age, grade level, race, participation in the Free Lunch program at school), familiarity with the medical system, familiarity with various careers, family members in the medical system, career interests within the health care field, and access to resources for learning about various careers. Quantitative questions were designed to utilize a 4 or 5-point Likert scale. Most questions were qualitative in nature to highlight the unique nature of every student's background and interests. Pre-/post-surveys were

numbered “1a” and “1b” respectively, and so on, such that direct correlation for each student could take place. Students were instructed to not write names on the surveys to maintain anonymity. Pre-surveys were distributed for completion immediately after students arrived and introductions of facilitators were performed, prior to describing the purpose of the event. Post-surveys were distributed at the very end of the event prior to students getting on the bus to return to Cass Tech High School. It is anticipated that we will continue to collect additional survey data with each iteration of this event on an annual basis. Surveys are included in the appendix.

Debrief and Feedback: As mentioned above, debriefing with the student participants at various portions of the day was a vital component of the event’s curriculum. Debriefing also took place at the very end of the event and feedback from the students was solicited. In addition to seeking feedback from the students, I asked my co-facilitators for feedback on the event as well. From my co-leaders I sought constructive feedback about the curriculum planning, logistics, organization, student engagement, and impact of the event. All health care professional volunteers were encouraged to give feedback about the career fair portion, organization, and student engagement during this session. Because this was a piloted event, feedback was crucial for making improvements or alterations and optimizing the programming for years to come.

Results:

Thirty DoT Rising students signed up to participate in the Interdisciplinary Medicine Day. Twenty total students attended the event on March 3rd 2019 and completed both pre- and post-surveys. Demographic information of the student participants is summarized below in Table 1. When asked how many times students had visited a doctor’s office, health clinic, urgent care, hospital, or other health care facility in the past year, the majority (11/20) responded that they had 1-2 visits in the past year. Another question inquired about how many students had family members that worked in health care fields. Fifty percent indicated one family member, 30% indicated no family member, and 10% indicated more than one family member with the most common fields listed being nurse (5), doctor (2), physician assistant (1), dentist (1), and social worker (1). The purpose of these questions was to demonstrate the students’ baseline familiarity with and exposure to the medical system prior to attending the Interdisciplinary Medicine Day.

Students were provided with a 5-point Likert scale to indicate familiarity with 15 different health care careers and could choose “not at all familiar”, “slightly familiar”, “somewhat familiar”, “moderately familiar”, or “extremely familiar”. This question was asked in both the pre- and post-survey for quantitative comparison of familiarity scores after having participated in the career fair during the Interdisciplinary Medicine day with some of the health care professionals present. All students indicated an overall increased familiarity score on the post-survey with an average pre/post difference of 18.35 points. A paired sample t-test was performed with pre/post familiarity scores yielding a p-value of 5.62×10^{-6} , strongly indicating the Interdisciplinary Medicine Day contributed to increased familiarity with health care careers.

When asked whether they had considered any of the health care careers, the most common careers that had been considered prior to the event included doctor (18), nurse (5), physical therapy (5), social work (4), physician assistant (2), dietitian (2), and pharmacist (2). A total of 14 different health care careers were listed as considered careers on the pre-survey. On the post-survey, 20 total careers were listed as having been considered, including new listings such as child life specialist, speech language pathologist, and occupational therapist. The top careers being considered after the event included doctor (13), social work (6), nurse (5), nurses practitioner (5), physical therapy (4), certified registered nurse anesthetist (4), dietitian (3), physician assistant (3), and pharmacist (3).

On the pre-survey, students were asked how interested they were in learning about various health care careers and indicated level of interest on a 5-point Likert scale, “not at all”, “slightly”, “somewhat”, “very”, “extremely” interested. Seventy-five percent indicated “extremely interested” and 25% indicated “very interested”. When asked about how much access to resources that students perceived they had for learning more about health care careers, responses were indicated on a 4-point Likert scale of “no”, “little”, “some”,

or “substantial” access. Thirty percent indicated they have “substantial access”, 65% indicated “some access”, and 5% indicated “little access”. Finally, students were asked to choose the correct definition for interdisciplinary medicine (multiple choice) on both the pre- and post-survey with 95% and 100% choosing correctly on the surveys respectively.

On the post-survey, students were asked to indicate how much new information they felt to have gained from having participated in Interdisciplinary Medicine Day on a 4-point Likert scale; all students (100%) indicated they learned a “substantial amount of new information”. Recorded examples of new information learned by students include “some professions only require associate’s degree”, “don't have to go to medical school to be in the health/medical field”, “pharmacist actually comes into contact with patients”, and “difference between physical and occupational therapist”.

Table 1. Demographics of student participants, excluding non-participating categories.

Gender (%)	
Female	80%
Male	20%
Age (Range)	
15 – 21 years	
Grade Level (%)	
10 th	45%
11 th	45%
12 th	5%
Undergraduate	5%
Race (%)	
African American/Black	65%
Asian	20%
White/Caucasian	5%
<i>Did not identify</i>	10%
Ethnicity (%)	
Hispanic	15%
Participation in Free Lunch Program (%)	
Yes	70%
No	20%
I don't know	10%

The post-survey additionally sought feedback about the event itself. All (100%) of students strongly agreed that the event helped them to gain exposure to what different healthcare professionals do. Eighty-five percent (17/20) students would strongly recommend that future DoT students should attend this event. Students unanimously suggested that an improvement for next year’s event would be to have more time available for meeting with the health care professionals during the career fair. In addition, some students suggested that more careers/volunteers would be available. Feedback received from the health care professionals that volunteered during the career fair included: 1) instructions were clear, 2) students were great and engaged, 3) students asked very insightful and high-level questions.

Conclusion:

The pilot Interdisciplinary Medicine Day with the DoT Rising students was largely successful in achieving the proposed learning objectives, exposing underrepresented minority students to other health care careers besides the physician, and increasing interest in a variety of health care careers. To my surprise, students did demonstrate a higher baseline familiarity with health care careers than I had originally anticipated; however, it was evident that students had not been introduced to the concept of interdisciplinary or multidisciplinary medicine prior to this event. For some students, they were excited to learn that other health care professionals worked very closely with physicians, the health care team, and directly with patients. For other

students, learning about the level of education required to pursue various careers was attractive. The event was also successful from the logistical, organizational, and student engagement perspectives. Students participated throughout the entire event and appreciated the opportunity to visit University of Michigan and meet health care professionals. After demonstrating the success of the pilot event, the goal to implement the Interdisciplinary Medicine Day into the DoT Rising curriculum on an annual basis will be feasible in coming years.

Despite the success of the event, there are some limitations or areas for improvement that I would encourage future DoT leaders to consider. One limitation is the transitioning of DoT leadership itself and whether future DoT leaders are interested or have the bandwidth to organize a similar event in coming years. A written instruction manual for planning and implementing this event will be shared with future leaders to try to minimize this barrier. Another limitation is the paper survey that was distributed before and after the event. Whereas most students completed the surveys fully and provided great responses on open-ended questions, some students skipped random questions, or some did not provide substantial explanations/examples when asked free-response questions. An online survey taken on accessible computers or laptops at the event may help such that students would not be allowed to progress to the next question unless they have completed each part or typing a response may be easier for students as opposed to writing. We did not utilize the computer labs available at the Taubman Health Sciences Library this year, but it is something that we could consider for the coming years. Finally, another way this event could improve for next year is to garner more health care volunteers and expand the career fair portion of the event. In particular, being able to garner participation from health care professionals who are underrepresented minorities themselves would be highly valuable for the DoT Rising students to experience and learn from.

One of the long-term goals of hosting an event such as the Interdisciplinary Medicine day is that underrepresented minority high school students, such as those from Cass Tech in the DoT Rising program, would be able to attend the event and form mentorship relationships with health care professionals in the various careers of their interest. Ultimately, we hope to further the health care field by increasing diversity and underrepresented minorities representation in all careers, thus contributing to better patient care.

Reflection/Impact Statement:

Although this project was designed for the high school participants within the Doctors of Tomorrow program, the curriculum and concept can be applied across multiple settings and for multiple groups of students ranging from underrepresented minorities to those attending private schools. In particular with underrepresented students, the largest barrier they are always confronted with is access to resources and mentors. Providing students with an opportunity to learn about the various health care fields that exist and how to go about getting involved is a large first step toward breaking down that barrier. Medicine as a whole can only benefit from the diversity of minds and backgrounds that will contribute to it. My hope is that this Interdisciplinary Day will continue annually, showcase different health care careers, and provide students with potential mentors in their field of interest.

Appendix:

1. Pre-Survey
2. Post-Survey
3. Simulation Prompts
4. Introductory PowerPoint
5. Event photos (zipped folder)
6. Proposed Individually Arranged Elective Form