

Abstract Title:

“Transforming Inter-professional Education through Simulation: Going the Extra Mile”

Background:

Simulation provides a safe, non-threatening environment for students to practice and learn skills, while increasing confidence, competence, decision-making ability, and clinical judgment. Typical inter-professional education (IPE) simulation involving various health professions offers substantial evidence that such training contributes to the development of collaborative, highly functioning health care teams. Despite the significance of social services like criminal justice as a critical component of the healthcare safety net, that sector has not routinely been part of the signature IPE initiated by health professions schools. Recognizing tremendous potential for mutual learning, our program has developed a unique simulation partnership with the Justice and Public Policy (JPP) program that aims to enhance learning about patient and personal safety, communication skills, collaboration, and role definition.

Methods:

Four simulations to address contemporary safety and teamwork issues in situations about vulnerable populations were developed and implemented throughout the semester. Simulations included unfolding events that drew on skills specific for each major (Nursing and JPP), while integrating components of patient-centered care. Issues of elder abuse, domestic violence, veterans with PTSD, and patients with brain injuries were among the topics explored in the simulations.

Implications:

All participants—27 nursing students and 35 JPP students—completed a safety and teamwork evaluation at the end of the semester. Overall, participants indicated that this experience increased their awareness of safety concerns, improved inter-disciplinary dialog skills, and heightened appreciation for other perspectives. Students also acknowledged the unique attributes that members with different professional orientations bring to a team. Inter-professional education promotes efficient use of resources as it affords opportunities to share infrastructure, institutional knowledge, and viewpoints. Bridging the health care and criminal justice systems revealed new dimensions of care coordination among team members from various professional backgrounds. This initiative holds promise for extending IPE to include non-traditional members of the care team, increasing appreciation for the different roles each plays in providing quality patient care. More IPE simulations have been planned that will include other non-traditional partners. Pre-seminary students will work with the nursing students on care of a person on hospice care. Child life specialists will work with nursing students on the care of children during pre-operative preparations and post-operative care.

Why don't residents do more research? A survey of residency training programs at UM

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ABSTRACT

Background: Research or scholarly activities are required by medical residencies and provide opportunity for residents to present nationally and to publish their work. However, engaging residents can be challenging due to lack of interest, limited time and funding, and lack of research mentorship. We sought to characterize the state of resident research in the University of Michigan Hospital System.

Methods: We conducted a confidential online survey of residency research directors in 22 departments between October-December 2015. We queried respondents about their roles, protected research and mentoring time for faculty and residents, financial resources, and mentor availability. We asked directors to estimate rates of research participation, presentations, and manuscript submission and to share perceptions of barriers to resident research. The study was determined to be "Not Regulated" by the IRB.

Results: The survey was completed by 24 respondents representing 20/22 departments. Most research directors (75%) had training in research methods formal training in research methods but reported limited protected time for resident mentoring. About 2/3 residencies offer residents protected time for research, usually 4-8 weeks. Funding varies significantly with very limited funding in primary care departments and significantly more in specialties. Less than half of departments report that all residents present their research or submit for publication. Identified challenges include defining projects with an appropriate scope, resident procrastination, and promoting manuscript writing and submission.

Lessons Learned: Academic departments share common barriers to resident research programs. An institution-wide small grant program, leadership to promote sharing and dissemination of best-practices, protected time for faculty mentors, and cross-departmental collaboration could substantially enhance resident research.

Future Applications: The GME office supported a meeting of residency research directors in 2016 to share challenges and best practices and survey results were broadly shared. Additional actions will require support from GME to promote cross-sectional changes.

The decline in attitudes towards physician-nurse collaboration from medical school to residency

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ABSTRACT:

PURPOSE

To investigate the change in attitudes regarding physician-nurse collaboration as learners progress from medical school to residency.

BACKGROUND

Interprofessional education is often part of early medical school curricula; however, as learners progress through their training, there is often less instruction in this important area. Little is known of the impact of clinical exposure on medical students' and residents' attitudes towards physician-nurse collaboration.

METHODS

Third year medical students and residents completed the validated Jefferson Survey of Attitudes Towards Physician Nurse Collaboration. This instrument has 20 questions in which trainees indicate their level of agreement with statements regarding physician-nurse collaboration. All items were scored on a 4-point Likert scale (1= strongly disagree to 4= strongly agree). Student and resident scores were compared using Student's t-tests.

RESULTS

The survey was completed by 129 medical students and 295 residents. The response rate for medical students was 75% and for residents was 18.4%. Resident respondents agreed more strongly with the notion of physician as dominant authority, "the primary function of the nurse is to carry out the physician's orders" (students: 2.02 ± 0.72 v. residents: 2.42 ± 0.81 ; $p < 0.0001$) and "doctors should be the dominant authority in all health care matters" (students: 2.36 ± 0.84 v. residents: 2.65 ± 0.87 ; $p = 0.001$). When survey responses are grouped by domain, there are also significant differences in learners' attitudes regarding responsibility for patient monitoring.

CONCLUSION

Resident physicians' perceptions of the nurse-physician relationship are significantly less favorable than the views of third year medical students, particularly in the areas of authority and responsibility. There may be some aspects of the hidden curriculum which contribute to the development of these interprofessional attitudes.

The Impact of Interprofessional Education in a Community Setting on Student Learning and Attitudes: A Pilot Study

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Abstract:

Interprofessional education occurs when two or more professions learn about, from, and with each other to facilitate effective collaboration and improve health outcomes (WHO, 2010). Silos of health care education exist throughout our universities, yet we expect our healthcare professionals to work together in medical centers and hospitals. Breaking down educational silos and learning together can improve teamwork and communication. An interprofessional team consisting of faculty from the University of Michigan schools/colleges of Nursing (undergraduate), Physical Therapy, Pharmacy and Medicine with support from the University of Michigan Center for Research on Learning and Teaching developed an interprofessional community based learning experience for students from these schools. An interprofessional course in the College of Pharmacy focusing on service learning already existed, but there was limited involvement from schools outside of Pharmacy. As part of this course, students participate in 8 learning sessions which discuss the Social Ecological Model of Health, and spend 20 hours in a community organization providing service.

The goal of the interprofessional faculty was to utilize an already existing community partnership, with Meals on Wheels, modify the community interactions, and determine the impact on student learning. This approach is consistent with the National Academies of Sciences, Engineering, and Medicine (2016) to educate health professionals regarding the social determinants of health, by engaging students through interprofessional projects in and with communities. Previously, students who were assigned to Meals on Wheels performed nutritional assessments of their clients. These health assessments were given to the director of Meals on Wheels and no other information was provided. In this program, up to 20 students in this IPE class will conduct up to five nutritional assessments with their same professional peer colleague and thereafter will conduct up to five nutritional assessments partnering with a different profession peer colleague. A mixed method approach using an Interprofessional attitudes scale, pre- and post- experiment and a focus group reflecting on the overall semester. In terms of evaluation, all students (n~65) in the course will complete the Interprofessional Attitude Scale (IPAS) at the beginning and end of the semester-long course. Students completing the nutritional assessments will be asked to participate in a focus group to examine their experience with the same profession versus different profession assessment activities. As well, all students will complete a reflection asking them to consider their inter-professional experiences in the course in terms of the social ecological model, with a focus on cultural intelligence. We will compare themes from the students completing the nutritional assessments with a sample of students from the remainder of the class.

Nursing students' oral health-related education, knowledge and behavioral intentions:
Comparing dental and nursing students' attitudes
L. Liu, D. Raghavan, M. R. Inglehart

Objectives: Increasing interprofessional care has become a topic of interest over the past decade in the U.S. Engaging medical and nursing professionals in oral health-related care has received significant attention because it could increase access to care for underserved patients in the U.S. The objectives of this study were (a) to analyze junior and senior nursing students' oral health-related educational experiences, knowledge and behavioral intentions, and (b) to compare the value that dental students vs. nursing students place on having nursing students well educated, knowledgeable and skilled in oral health-related care.

Methods: Survey data were collected from 146 junior and 64 senior nursing students and from 100 first year dental students.

Results: Two thirds of the nursing students reported that they had learned about patients' oral health (68%) and one third about pediatric patients' oral health (32%). While the majority of nursing students had learned about how medications affect oral health (57%) and 41% about dental care providers, very low percentages had learned about any additional oral health-related issues. While nearly all nursing students were knowledgeable about the relationships between medications, medical treatments and oral health, very small percentages indicated that they were knowledgeable to examine or diagnose any oral health-related problems. However, their thoughts about including oral health-related issues in their future professional lives were on average quite positive. A comparison of the importance ratings of nursing and dental students showed that dental students considered it as more important than nursing students that nursing students learn about oral health issues in clinical settings, about the relationships between oral and systemic health, about being able to recognize abnormal intraoral pathologies and how to collaborate with dental care providers.

Conclusions: The data showed that nursing students do not receive a strong oral health-related education and therefore are not sufficiently knowledgeable and skilled to engage in oral health-related interprofessional care. However, they are interested in such activities and dental students value the nursing students' collaboration highly.

Table 1: Overview of the background characteristics

Background characteristics	Nursing students	Dental students	Dental hygiene students
Number of students	210	100	23
Year of program:	N3=146 N4=64	D1=100	DH2=23
Gender:			
- male	11(5%)	59 (65%)	1(5%)
- female	199(95%)	32 (35%)	20(95%)
Age:			
- Mean (SD)	21.59 (3.172)	24.24 (2.767)	20.74 (1.356)
- Range	19-48	20-35	19-23
Ethnicity / race:			
- African American	6(3%)	n/a	n/a
- Asian American	19(9%)		
- Biracial	5(2%)		
- European American	172(83%)		
- Hispanic	5(2%)		

Table 2: Nursing students' oral health-related responses

Responses related to students' own dental health:	1	2	3	4	5	Mean SD
The health of my teeth and gums is ¹ :	0	7(3%)	44(21%)	105(50%)	54(26%)	3.98 0.776
Frequency of tooth brushing ²	0	2(1%)	9(4%)	35(17%)	164(78%)	4.72 0.589
Frequency of teeth floss ²	4(2%)	107(51%)	47(22%)	46(22%)	6(3%)	2.73 0.922
Dental visit-related responses						
Visit in past year?	Yes: 185(88%)	No: 25(12%)				
Feelings about dental visit:	Comfortable 165(79%)		Apprehensive 42(20%)		Scared 3(1%)	
Procedures:	0	1	2-4	5-8	9 & >	Mean
- Tooth pulled	93	38	57	7	14	1.98
- Fillings	91	35	54	20	10	1.91
- Root canals	172	20	12	3	3	.50
- Crowns	191	11	7	0	1	.19
Dental pain right now	Yes 18(9%)	No 191(91%)				
Untreated dental disease	5(2%)	204(98%)				

Legend:

- 1 Answers ranged from 1= poor, 2 = fair, 3 = good, 4 = very good to 5 = excellent.
- 2 Answers ranged from 1 = never 2 = rarely 3 = nearly every day
4 = every day to 5 = more than once a day

Table 3: Nursing students' education about oral health during their undergraduate nursing education

Did you learn about	N (Yes) / %	# hours: Mean Range
- patients' oral health?	108 68%	1.10 0-40
- pediatric patients' oral health?	54 32%	0.60 0-40
- oral health care for hospitalized pediatric patients?	40 25%	0.25 0-10
how medications may affect oral health?	90 57%	0.69 0-10
how different treatment/interventions affect children's oral health?	37 26%	0.47 0-8
- how to assess oral health of hospitalized children?	37 26%	0.22 0-8
how to promote good oral health of hospitalized children?	40 27%	0.23 0-8
how to clean children's teeth?	29 21%	0.16 0-8
when to seek dental care for children who undergo procedures requiring dental clearance?	17 13%	0.05 0-4
when to refer children to dental professionals?	16 12%	0.04 0-4
education/information from dental care providers	82 41%	
dental topics not covered during education		

Table 4: Knowledge related questions

Knowledge questions	Frequency of "Yes"	Percentage
Age when pediatric patients see dentist:		
<=1	33	17%
>1 to 2	58	30%
>2 to 3	101	53%
Can medical conditions affect pediatric patients' oral health?	206	100
Can medications affect pediatric patients' oral health?	207	100
Can medical treatments / interventions affect pediatric patients' oral health?	207	100
Can pediatric patients' oral health can affect their systemic health.	205	99
Is it recommended to brush baby teeth?	158	78
Is using a foam swab to clean a patient's mouth effective?	116	56
Is it necessary to refer a pediatric patient if oral health problems are observed?	203	99
Is it important to give oral health instruction to caregivers of hospitalized pediatric patients?	205	99
Do you have sufficient knowledge to perform/provide		
Oral exams	22	11
Fluoride Varnish Application	13	6
Oral Hygiene Procedures	42	20
Can you diagnose:		
Dental Caries	19	9
Gingivitis	28	14
Mucositis	20	8
Intraoral viral infections	6	3
Intraoral fungal infection	27	13
How often should oral hygiene be performed in hospitalized pediatric patients?		
Once a day	60	34
Twice a day	100	57
Thrice a day	15	9
Which is the best tool for cleaning a hospitalized pediatrics patients mouth?		
Toothbrush	129	80

Swab	43	27
Floss	5	3
Sponge	15	9

Table 5: attitudes

It is important that nurses	Respondent	1	2	3	4	5	Mean
learn about oral health issues in nursing school.	Dental	1(1%)	1(1%)	12(12%)	28(28%)	57(58%)	4.40
	nursing	1(1%)	4(2%)	21(10%)	100(49%)	78(38%)	4.25
learn about oral health issues in clinical settings.	Dental	0	0	11(11%)	28(28%)	60(61%)	4.49
	nursing	0	6(3%)	14(7%)	107(52%)	78(38%)	4.25
learn about oral health issues in continuing education.	Dental	0	2(2%)	13(13%)	42(42%)	42(42%)	4.25
	Nursing	1(1%)	7(3%)	30(15%)	101(50%)	66(32%)	4.09
know about the relationship between oral and systemic health	Dental	0	0	7(7%)	25(25%)	67(68%)	4.61
	Nursing	1(1%)	2(1%)	13(6%)	84(41%)	105(51%)	4.41
know about how medical conditions affect children's oral health.	Dental	0	1(1%)	5(5%)	29(30%)	63(64%)	4.57
	Nursing	1(1%)	3(2%)	13(6%)	96(47%)	92(45%)	4.34
know about how medications affect children' oral health.	Dental	0	1(1%)	8(8%)	32(32%)	58(59%)	4.48
	Nursing	1(1%)	3(2%)	15(7%)	91(44%)	95(46%)	4.35
know about how medical treatments / interventions affect children's oral health	Dental	0	0	7(7%)	35(36%)	56(57%)	4.50
	Nursing	1(1%)	2(1%)	15(7%)	94(46%)	93(55%)	4.35
know the signs and symptoms of dental disease in children	Dental	2(2%)	6(6%)	32(33%)	57(58%)	97(100%)	4.48
	Nursing	1(1%)	5(2%)	22(11%)	77(38%)	99(48%)	4.34
can perform/provide: Oral exams	Dental	3(3%)	10(10%)	22(22%)	33(33%)	31(31%)	3.80
	Nursing	4(2%)	23(11%)	59(29%)	67(33%)	50(24%)	3.72
can perform/provide: Oral Hygiene	Dental	9(9%)	18(18%)	25(25%)	22(22%)	25(25%)	3.36

Procedures	Nursing	3(2%)	14(7%)	49(24%)	73(36%)	64(31%)	3.94
can perform/provide: Oral health education	Dental	4(4%)	6(6%)	14(14%)	29(30%)	45(46%)	4.07
	Nursing	2(1%)	13(6%)	44(22%)	81(40%)	63(31%)	3.99
can recognize: Dental caries	Dental	5(5%)	16(16%)	23(23%)	27(27%)	38(28%)	3.58
	Nursing	6(3%)	27(13%)	53(26%)	64(31%)	55(27%)	3.66
Gingivitis	Dental	4(4%)	10(10%)	17(17%)	32(32%)	36(36%)	3.87
	Nursing	3(2%)	24(12%)	15(24%)	68(33%)	60(29%)	3.77
Abnormal intraoral pathologies	Dental	4(4%)	6(6%)	13(13%)	29(29%)	47(48%)	4.10
	Nursing	2(1%)	20(10%)	48(23%)	73(36%)	62(30%)	3.84
perform oral hygiene in hospitalized pediatric patients.	Dental	7(7%)	15(15%)	23(24%)	28(29%)	25(26%)	3.50
	Nursing	0	5(3%)	22(11%)	78(38%)	99(49%)	4.33
collaborate with dental care providers	Dental	1(1%)	1(1%)	10(10%)	30(30%)	57(58%)	4.42
	Nursing	1(1%)	6(3%)	35(17%)	76(37%)	87(42%)	4.18
use an oral assessment guide.	Dental	2(2%)	4(4%)	13(13%)	41(42%)	38(39%)	4.11
	Nursing	3(2%)	5(2%)	40(20%)	80(39%)	77(38%)	4.09
perform an oral assessment with every patient	Dental	4(4%)	10(10%)	23(24%)	31(32%)	29(30%)	3.73
	Nursing	4(2%)	15(7%)	43(21%)	77(38%)	66(32%)	3.91
see oral health issues to be as important as systemic health issues	Dental	1(1%)	2(2%)	10(10%)	25(25%)	61(62%)	4.44
	Nursing	1(1%)	4(2%)	36(18%)	82(40%)	82(40%)	4.17

Legend:

1 Answers ranged from 1 = disagree strongly to 5 = agree strongly.

Table 6: Behavioral intentions

Thoughts about professional future In my future professional life	1	2	3	4	5	mean
I would like to work with pediatric patients.	18(9%)	17(8%)	38(19%)	40(20%)	90(44%)	3.84
I intend to provide oral health education for adult patients	13(6%)	25(12%)	63(31%)	68(33%)	35(17%)	3.43
I intend to provide oral health education for children and their parents.	10(5%)	14(7%)	42(21%)	87(43%)	51(25%)	3.76
I will assure that I identify patients with oral health issues.	2(1%)	7(3%)	52(26%)	92(45%)	51(25%)	3.90
I will provide oral hygiene services for hospitalized patients.	3(2%)	5(3%)	43(21%)	89(44%)	64(31%)	4.01
I will make sure that patients with oral health issues will be referred to a dentist.	1(1%)	2(1%)	35(17%)	89(44%)	77(38%)	4.17
I will attend CE courses about oral health issues.	9(5%)	29(14%)	84(41%)	55(27%)	26(13%)	3.30

Legend:

1 Answers ranged from 1 = disagree strongly to 5 = agree strongly.

*Health Professions Education Day
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Incorporating Social Justice Grand Rounds into an Existing Pharmacy Ethics Course

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Background:

National recommendations, accreditation bodies, and U-M initiatives have resulted in a movement to incorporate interprofessional education (IPE) within health science curricula. The hope is that expanding the educational background of our students to include a better understanding of the knowledge, skills, and perspectives different health professionals bring to the healthcare team will improve the triple aim of healthcare – improving the patient experience and population health while decreasing the cost of health care. It can be challenging to create meaningful interprofessional experiences due to infrastructure barriers including time, resources, and logistics. By combining two existing activities, faculty from pharmacy and social work were able to create a meaningful IPE experience that brought together their student learners in a real-world setting.

Methods/actions:

Social Justice Grand Rounds (SJGR) is a structured event at Michigan Medicine that formally unites various social work constituents including graduate students, field instructors, clinicians, and faculty in a collaborative effort to address social injustice in health care. The typical format involves a presentation of a case that highlights the relevant social justice issue followed by a panel discussion and audience discussion. The educational session is provided by a masters of social work student doing field work at Michigan Medicine, under the direction of the field instructor.

The pharmacy medical ethics course is a required course for third-year pharmacy students that focuses on understanding and applying ethical principles to challenging, real-world situations. Ethical dilemmas are presented using topic-based discussions that bring evidence-based medicine, ethical principles, and clinical dilemmas into the classroom. Class sessions are facilitated by faculty who practice in the area, bringing authenticity through the use of real-world experience.

Faculty from pharmacy and social work merged these two existing activities as a means of providing an intentional, meaningful, real-world IPE experience to students. The November 2016 SJGR topic focused on providing care to transgender people, a topic that was important and relevant to both schools' curricula. Faculty defined learning objectives and ensured the event was organized to include intentional time where students would interact with each other. Faculty from social work had the lead for SJGR; faculty from pharmacy had the lead for developing the learning objectives and assignments as the event was tied to graded work in the pharmacy course.

Teaching materials designed to guide student learning were assigned to all students. The goal of the session was to provide student learners an opportunity to identify factors that optimize care provided to transgender people, and discuss the ways in which interprofessional collaboration can influence overall patient care. An anonymous survey was sent to students three weeks prior to the session, allowing them to ask questions or raise concerns about the topic. Their questions were used to guide the interprofessional panel discussion during the grand rounds session. Following the formal SJGR program, students were put into interprofessional groups (e.g., one social work student with two pharmacy students) and were provided with prompts to guide discussion about transgender care and about how interprofessional collaboration would improve the patient experience. An anonymous post-session survey provided feedback on the perceived value of the interprofessional experience. Pharmacy students were also required to complete a post-class reflection asking them to identify one thing they took away from the

session, or one thing they would change in their approach to care as a result of participating in the session. Social work students were encouraged to also complete this post-session assignment.

Results:

There were 151 attendees present, 44 of which were licensed social work practitioners, 78 pharmacy students, and 29 social work students. Over 97% of students reported having a greater understanding of health care disparities for transgender people, and 93% reported having an appreciation for actions they can take to create a more welcoming environment. Over 90% reported having a better understanding of the perspectives each discipline brings to patient care, and a greater appreciation for the importance of interprofessional teamwork and open communication when providing clinical care. Over 90% of students from both professions felt that learning about the care needs of transgender people was enhanced because the session was done with students from another discipline. There were no significant differences between the level of agreement between pharmacy and social work students in any of these areas. There was a significant increase in awareness of the health care needs of transgender people reported by both student cohorts after attending the session compared to baseline based on a 5-point Likert scale (1=very poor, 5=very good; 4.0 vs 2.8 for pharmacy students, 4.3 vs 3.5 for social work students; $p < 0.001$ for both cohorts).

Lessons learned:

We piloted an approach that allowed us to connect an existing program (SJGR) with a didactic course as a means of providing a meaningful IPE experience to students from pharmacy and social work. Results from the post-class survey show that students saw great value in the program, learning not only about the topic of transgender care but, perhaps more importantly, about each other's professions and ways in which to collaborate. For pharmacy students it was also an opportunity to do something completely different with class time; it was also their first time in Ford Auditorium and first experience attending a grand rounds presentation. Those aspects in themselves made for a novel learning experience. All students valued the small group discussion where they could learn from each other. The small size allowed for good discussion and prevented students from disengaging as they might have had the group size been larger.

The time required to create this one-time interprofessional activity was slightly more than would have been required to create a new didactic session. However, the result was an enriched learning experience for both faculty and students. Offering the session at the Michigan Medicine Ford Auditorium allowed for learning to occur in a real-world setting, which further added value to the experience.

Future applications/next steps:

We are committed to including SJGR within the pharmacy ethics course in fall 2017, allowing students to continue to explore a real-world issue related to social injustice in health care. Fortunately, the time in our schedules for the pharmacy ethics course and SJGR coincide, allowing for this to occur. In addition, we believe it is important to develop a different opportunity that brings our student learners together to explore the topic of providing care to LGBTQ people. We are currently working on an additional meet together for pharmacy and social work students specific to this topic, expanding on the content provided in this year's SJGR to be more inclusive of LGBTQ issues. Students from both of our programs are asking to learn more about providing care to this population. We feel it is important for us to build upon what we developed last year and keep it going. Our hope is to also be able to expand this session to students from other health science fields.

Poster #110

Interprofessional Health Student Organization

Michelle Kappy and Suzie Genyk

Background:

The Interprofessional Health Student Organization (IHSO) is a student-run organization founded in 2013. The purpose of IHSO is to enhance the knowledge and experiences of our student-members through discussion and interactions with members of various healthcare professions. IHSO is comprised of members from the seven health professional schools within University of Michigan, including the Nursing, Medical, Social Work, Dental, Pharmacy, Public Health and Kinesiology schools. Engagement in interprofessional lectures, events, and cases will improve communication and teamwork among the health care professions as we enter our respective fields. The unique skills and experiences provided by IHSO affords students an avenue of learning that would not otherwise be obtained in their school's curriculum.

Methods:

Monthly executive meetings are held for fifteen board members. Bi-annual mass meetings are held for interested potential members as well as current IHSO members. We have monthly events that include speakers, social hours, health fairs, volunteering, and case-study presentations. There are student representatives from our organization on both the University of Michigan Interprofessional Education (IPE) Curriculum Workgroup and the University of Michigan IPE Executive Committee. We also collaborate with other health professional student organizations who share common goals and ideals.

Results:

IHSO provides members with opportunities to engage in teamwork and communication with other healthcare professional students. During mock case studies and active group discussions, differential diagnoses are collaboratively compiled, and multidisciplinary treatment plans are created. IHSO advocates on behalf of our fellow students to encourage the development of classes and activities that can be implemented in the new IPE curriculum at University of Michigan. Members also learn from peers about their respective fields, with the hope of ultimately changing the culture of the healthcare field to be more inclusive and to value contributions from each health profession. Continued collaboration and mutual respect will create an environment that fosters patient-centered care.

Lessons Learned:

Through various planning meetings and event facilitation, IHSO executive members engage in meaningful learning experiences. Effective teamwork necessitates both open communication and flexibility. While meeting as an executive board, members are open to new ideas while offering constructive feedback. Changes in leadership have also provided opportunities for skill development while challenging members to work well together. Being part of a large leadership board also requires accountability and time management.

Next Steps:

Ongoing plans for the next few years include developing partnerships with other health professional organizations and continuing our role within the University of Michigan Center for Interprofessional Education. IHSO has set a number of goals for the upcoming year to expand the membership and scope of inter-professional experiences offered. IHSO will continue with monthly "study tables" where board members host study groups that are open to all seven health professional schools. Upcoming events in the next few months include a guest speaker discussing the challenges of diversity and disability, a talk on the importance of interprofessional communication, and a health fair collaboration with the School Of Pharmacy. The unique role of IHSO at the University of Michigan is to provide interprofessional opportunities for students beyond their respective curricula. This organization offers a space for members to network, gain perspective, and forge connections through a common commitment to care.

Medical Innovation Program- The Shark Tank

Adish Parikh, Seth Klapman, Patrick Li, Ali Arastu, Jessa Miller, Neal Alattar, Owen Brown

Background:

Medical education has traditionally focused on teaching the sciences and clinical application. Although this plays an imperative role in students' education, training students to become physician leaders to address tomorrow's macroscopic healthcare problems is lacking. With growing inefficiencies in healthcare, our future physicians must work with individuals across campus and the health system to create innovative solutions. The Medical Innovation Group (MIG) was founded to address the gap in education. For the first time, MIG, along with the Surgery Interest Group (SCRUBS), created an innovation incubator that culminated in a pitch competition for the University of Michigan Medical School student body.

Actions/Methods:

The University of Michigan Medical School's Medical Innovation Group (MIG) has partnered with the Surgery Interest Group (SCRUBS) to create the Shark Tank, a 7 month incubator for medical students to develop innovative solutions for modern day healthcare issues. With 9 teams and a total of 34 first and second year medical students, the Shark Tank program was designed to address the gap between student interest in healthcare technology and hands-on medical innovation.

The program facilitated partnerships with UMHS physicians to give students the opportunity to shadow in the clinic and operating room to identify inefficiencies. Teams used these experiences to identify a current healthcare problem and develop a tangible solution that addressed it. Shark Tank then hosted a Preliminary Pitch Night, where teams presented their initial ideas to physician faculty members, who then were paired to teams that aligned with their own interests. Next, the program developed relationships with entrepreneurial organization on the University of Michigan campus to collect resources and potential advisers for the teams, including the law school's Entrepreneurship Clinic for legal advising, the Center for Entrepreneurship for general consultancy.

The next phase of Shark Tank consisted of all teams enrolling in the Fast Forward Medical Innovation Early Technology Development course, which consisted of a 4 week program that supported students in the process of needs-finding, customer discovery, and crafting a coherent business solution around their proposed idea.

Students were given the opportunity to publish their innovations and value propositions to the Michigan Journal of Medicine. The program culminated in a Shark Tank Finale, where five teams of students pitched their vetted ideas to seasoned venture capitalists and successful entrepreneurs for an opportunity to win \$4000 in education grants. These grants are meant to

further the prototype development and to attend healthcare innovation conferences across the country.

Results:

We created a collaborative and interprofessional program to connect teams of medical students with business and healthcare experts across the university to develop innovative healthcare solutions. This ultimately led to the Shark Tank Finale. With over 50 audience members from across the University of Michigan community in attendance, the five final Shark Tank teams pitched their ideas for a chance to win at this event. The first place team was awarded \$2500 to further their idea of a novel catheter using UV light and reactive oxygen to reduce rates of infection. The second place team was awarded \$1500 to further their development of a technology for quicker diagnostics using biomarkers.

Lessons Learned:

There is tremendous interest from the medical student body to learn about innovation in healthcare and there are several faculty members and university organizations willing to support students in this endeavor. Based on feedback from venture capitalists, we believe that there is strong potential for some of these student ideas to be developed in ventures.

Future Applications and Next Steps:

We hope to continue the Shark Tank competition as an annual event. We would like to make the program more interdisciplinary by recruiting students from other UM graduate programs. We are also working on connecting with angel investors to invest their own resources into the ideas. Lastly, we hope to work with the Innovation Path of Excellence program at the medical school to look for more sources of funding to make this program even bigger.

UM HPE Day 2017 Abstract

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Category for Abstract Submission

Interprofessional Education Experience

Abstract Title

Teaching Motivational Interviewing in an Interactive Interprofessional Format: A Pilot Workshop Series

Background

In 2010, the World Health Organization Department of Human Resources for Health published their “Framework for Action on Interprofessional Education and Collaborative Practice” (World Health Organization Department of Human Resources for Health, 2010). Here they emphasized the importance of interprofessional care in the future of the health care field. In the United States, the Patient Protection and Affordable Care Act also changed the paradigm of health care delivery by embracing interprofessional education (IPE) and interprofessional patient care (IPC) (Zorek & Raehl, 2013). IPE has been defined as students from at least two disciplines having courses together—either discretely or across the entire curriculum—in which they learn together by interacting with each other (Formicola, et al., 2012). The ultimate goal of IPE is to promote IPC in health care settings as the optimal way to

provide patient care. An important aspect of this is engaging providers from a variety health care disciplines in interprofessional education.

Efforts to understand how to implement IPE effectively at the University of Michigan are in its infancy. However, IPE efforts and innovation are growing. In 2015, The Michigan Center for Interprofessional Education was created at the University of Michigan. This center is supported by a five-year, \$3 million grant from the provost's office and \$3 million from the deans of participating health science schools (School of Dentistry, Kinesiology, Nursing, Public Health, Social Work, Medical School and College of Pharmacy). In 2016, the center charged an interprofessional group of faculty to develop an IPE effort centered on Motivational Interviewing (MI).

Since MI is applied across disciplines, with an engaging, interactive learning format, it is ideal for an interprofessional learning experience. A group of faculty from the University of Michigan across health disciplines (Dental Hygiene, Dentistry, Kinesiology, Medicine, Nursing, Pharmacy, Physical Therapy, Public Health, and Social Work) developed a pilot IPE MI workshop series.

The goal for the pilot was to evaluate (1) the feasibility of teaching MI in an IPE format; (2) the ability to maintain quality of MI content while (3) meeting the IPE objectives. The aims of this poster are to describe the (a) planning efforts for this workshop around both process and content of the workshop (b) "results," including how many students from various disciplines participated; (c) "lessons learned" from this experience and; (d) future endeavors of the MI—IPE workgroup.

References

Formicola, A.J., Andriue, S.C., Buchanan, J.A., Schneider Childs, G., Gibbs, M., Inglehart, M.R., et al. (2012). Interprofessional education in U.S. and Canadian dental schools: An ADEA team study report. *Journal of Dental Education*, 76(9), 1250-1268.

World Health Organization (WHO) Department of Human Resources for Health (2010). Framework for action on interprofessional education and collaborative practice. *Geneva: World Health Organization*, 2010(64), 1-64.

Zorek, J., Raehl, C. (2013). Interprofessional accreditation standards in the USA: A comparative analysis. *Journal of Interprofessional*, 27(2), 123-30.

Actions, Methods of Intervention

The faculty involved in the IPE—MI workgroup were first introduced one year prior to the offering at an interprofessional education retreat held by the Michigan Center for Interprofessional Education and evolved over the course of the year. The group ended up involving 10 faculty from 8 of the UM health science schools: social work, medicine, public health, nursing, pharmacy, dentistry, dental hygiene and physical therapy (UM Flint). Kinesiology was intended to be involved, but no faculty were able to be recruited. Throughout the year the faculty group worked together to design, plan, and implement the workshop, which would be held in two 3-hour blocks one week apart early in the Winter Term, 2017.

The IPE—MI workshop series was created as an optional experience for up to 12 students from 9 health science disciplines/schools: social work, medicine, public health, nursing, pharmacy, dentistry, dental

hygiene, kinesiology and physical therapy (UM Flint). Selection criteria for the participants were developed and agreed upon. The student bodies of each school were contacted by respective faculty to elicit interest. Interested students completed a brief survey to indicate their level of experience with IPE and MI. Students had mandatory pre-requisite readings to ensure a shared MI background prior to the two, 3-hour workshop sessions.

Student learning objectives for the workshops included: (1) learning across disciplines about the use of MI with a variety of patients and problem areas; (2) working with individuals from other professions to foster a climate of mutual respect and shared values; (3) learning cutting-edge MI skills that can improve treatment engagement across disciplines; (4) getting a better understanding of the challenges that various disciplines face in engaging and treating patients.

Results

A total of 161 students from all 9 academic units logged into the website provided for workshop registration. Students' experience with IPE and MI ranged from "none" (N=12/N=10) to "extensive" (N=4/N=2). Means on scale from 1=none to 4=extensive were 2.37 for IPE and 2.47 for MI. Open-ended responses reflected commitment to and interest in IPE.

A total of 76 students were selected from the applicants to register for the workshop series, based on their MI and IPE experience. Twelve (12) were from Dentistry, 9 from Dental Hygiene, 7 from Medicine, 9 from Nursing (with 6 from UM Flint Nursing School), 11 from Pharmacy, 7 from Public Health, 12 from the Social Work, 1 from Kinesiology and 2 from UM Flint Physical Therapy.

Of the 76 registered students, 62 attended the first workshop, and 57 attended the second workshop one week later. The faculty listed above facilitated the workshop, and convened to debrief the workshop activities following each workshop to process results and plan for next steps.

Lessons Learned

This was the first didactic IPE experience for most of the participating faculty. Throughout the process of workshop development and implementation, faculty both engaged the students, as well as regularly reflected as a group, to enhance workshop planning and delivery. Faculty debriefs identified a number of positive outcomes and challenges that may help inform adjustments to future offerings.

Positive outcomes included:

1. Faculty from 8 health science disciplines came together to design, plan, and implement the workshop series. They showed enthusiasm to engage in the process and expand the scope of IPE at the University of Michigan.
2. Workshop was well attended and all 9 health sciences schools were represented.
3. Most students found the MI training informative and would want to participate again in the future.

4. Students were enthusiastic about the opportunity to learn about, from, and with students from other disciplines.

Challenges faced:

1. Difficulties finding times when all 9 faculty members could meet made unanimous agreement on process and content difficult. This had a number of downstream effects on various aspects of the workshop.
2. Many meetings were comprised of subgroups by phone or videoconferencing. Most communication occurred via e-mail with varied participation amongst faculty from meeting-to-meeting.
3. Due to difficulties obtaining consent from all parties, some decisions were made out of pure necessity, and may not have reflected the input of all faculty.
4. The lack of a clear organizational structure created difficulties achieving consensus in a timely manner.
5. There were difficulties agreeing on the balance of Motivational Interviewing to IPE content in the workshop itself. Motivational Interviewing content elements ended up being emphasized, as this element was more intuitive to the MI educators leading the sessions. Faculty and student feedback following the workshop indicated a desire for more IPE content and active learning.

Future Applications and Next Steps

The MI—IPE workgroup plans to continue with the momentum created, beginning with further development of the IPE faculty team, including regularly scheduled meetings to improve upon this first IPE—MI effort. We plan to first agree on group process and norms before deciding on content for a potential workshop in the fall of 2017. Faculty have applied for a CRLT Whittaker Grant and hope to be funded to provide structural support for continuing this effort. We will seek out additional small grants to help fund future IPE—MI endeavors. We also plan to analyze student feedback data and submit results for publication in various discipline-specific journals. Additionally, students have indicated a strong interest for becoming involved in the planning of future offerings. Our group will determine the best method for involving students in the design, planning, and implementation of future IPE-MI offerings.

*Note: This is one of two submissions for this project. The other is being submitted by Marita Inglehart and will cover analysis and data related to changes in student knowledge of MI and IPE at baseline, after session 1, and after session 2.

UM HPE Day 2017 Abstract

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Category for Abstract Submission

Interprofessional Education Experience

Abstract Title

An Interprofessional Education Approach to Teaching Motivational Interviewing to Students from Eight Health Profession Schools: An Overview of Students' Program Evaluations

Background

In 2015, The Michigan Center for Interprofessional Education was created at the University of Michigan. This center is supported by a five-year \$3 million grant from the provost's office and \$3 million from the deans of the participating health science schools on campus (School of Dentistry, Kinesiology, Nursing, Public Health, Social Work, Medical School and College of Pharmacy). In the Winter term of 2016, the Center charged an interprofessional group of faculty from these units and the School of Health Professions and Studies on the Flint campus to consider an interprofessional education (IPE) effort centered on motivational interviewing (MI). Since MI is used by providers in all health professions as a technique for engaging patients in positive health behavior change, it is an ideal subject matter for an IPE workshop. The group developed a pilot IPE MI interviewing series of two three-hour long workshops. The goal was to evaluate (1) the feasibility of teaching MI in an IPE format; (2) the ability to maintain quality of MI content while (3) meeting the IPE objectives. The aims of this presentation to assess the students' (a) baseline education, knowledge/background and attitudes related to MI and IPE as well as their (b) end evaluations after Workshop 1, and (c) end evaluations after Workshop 2.

Actions, Methods of Intervention

This research was determined to be exempt from Institutional Review Board (IRB) oversight by the Health Sciences and Behavioral Sciences Institutional Review Board (IRBHSBS) of the University of Michigan in Ann Arbor on January 23, 2017 (#HUM00126049).

Respondents: After recruitment emails had been sent to the students in the eight health professions schools, 161 students logged into the registration survey and 136 of these students completed the registration; in order to not invite more than 12 students from each of the eight schools, 77 of these students were invited to participate in the workshop. All 77 students

responded to the baseline survey. Sixty-six students attended the first workshop and 59 students attended the second workshop. Fifty-eight students responded to the evaluation survey at the end of Workshop 1 and 47 students responded to the survey at the end of Workshop 2.

Procedure: The registration and baseline surveys were collected with web-based surveys. The students were informed about the surveys in an email that provided them with a web-link to these surveys. The two evaluation surveys at the end of the two Workshops were paper-pencil surveys. The data were matched by asking the students to provide their birth dates on the baseline, End of Workshop 1 and End of Workshop 2 surveys.

Materials: The recruitment survey collected information about the program the students attended and ratings of their level of experience with IPE and with MI. The baseline survey contained background questions about their education in MI (4 items) and IPE (2 items), their attitudes towards IPE (4 items) and MI (6 items), their MI-related knowledge (6 items), and the Readiness for Interprofessional Learning Scale (RIPLS).

Results

Responses to the Baseline Survey showed that seven invited students had no prior classroom-based experiences with MI, 25 no MI skills training, and 50 students had no prior IPE experiences. While the self-perceived preparedness to engage patients in MI and the confidence in having MI skills ranged therefore widely, 97% agreed /agreed strongly that they looked forward to the workshop, 99% that they looked forward to learning about MI, and 96% to interacting with students from other health profession schools. The responses to the 6 MI-related objective knowledge questions showed that 48% of the students answered all 6 questions correctly and 27% answered 5 questions correctly. Having assigned MI readings prior to the first Workshop might have contributed to these positive results.

The students also responded to the Readiness for Interprofessional Learning Scale (RIPLS). A factor analysis (Extraction Method: Principal Component Analysis; Rotation Method: Varimax Rotation) showed that the 19 items loaded on 3 factors. The nine items loading on Factor 1 can be described as measuring a readiness to learn and engage in teamwork / cooperate with other health professionals (Cronbach alpha = .886); the eight items loading on Factor 2 capture a readiness to learn about professional identity (Cronbach alpha = .614), and the last two items are concerned with professional role considerations. The average "Team-work / cooperation" scores ranged from 3.33 to 5.00 on a 5-point scale with 5 indicating the most positive answer (Mean=4.57) which shows that the students had a very high level of readiness to learn about IP teamwork and cooperation; the average "Professional identity" scores ranged from 2.88 to 4.88 (Mean=4.12).

The students' evaluation at the end of the first Workshop showed strong appreciation of the MI related educational efforts. However, both closed-ended as well as open-ended responses indicated that IPE efforts had not been seen as sufficiently well developed. The higher the

students' "Team-work / cooperation" and "Professional identity" scores were, the more they appreciated discussions of presented video tapes ($r=.353$; $p<.01$ / $r=.457$; $p<.001$) and the more they looked forward to the second workshop ($r=.292$; $p<.05$ / $r=.272$; $p<.05$). The students' evaluations after Workshop 2 reflected the positive effects of increased efforts to engage students in IPE activities.

Lessons Learned

The student baseline data show the exceptionally high interest of these volunteer students to engage in learning about IPE and MI. Increasing efforts in all health profession schools to offer IPE approaches not only when teaching communication skills, but also during clinical activities are therefore urgently needed.

However, the finding that students evaluated the MI efforts very positively, but realistically assessed the IPE efforts as not as well developed points to the significance of providing strong faculty development resources and training to prepare faculty members adequately and optimally to respond in the best way possible when engaging in IPE teaching.

Future Applications and Next Steps

Gaining a better understanding of the unconscious biases that exist concerning different health professions is a crucial first step to allow positive interactions between faculty members and students from different health professions. The next steps will therefore be to (a) utilize the student feedback to revise the workshop design, while (b) developing unconscious bias training material for faculty to create a cultural climate both in faculty working groups as well as workshop settings that is free of unconscious generalizations and stereotyping of providers from different health profession backgrounds.

Team Simulation to Facilitate Learning of IPE Competencies

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Background:

Simulation, as a method, has been proven to foster and practice team-based decision making in health professions education. Using simulation exercises, students are provided an opportunity to develop skills in ethics/professionalism, communication, roles and responsibilities, and teams/teamwork while navigating the nuances of these behaviors in an observed and mentored setting. A simulation exercise was designed for inclusion in the University of Michigan's Interprofessional Education (IPE) Course on Team-Based Clinical Decision Making for the Winter semester 2017. Utilizing mixed methodology, our interprofessional faculty team has three specific aims: 1) to evaluate if the sequence of these experiences affects observable team performance 2) to identify if measured teamwork attitudes and behaviors correlate to the timing of the simulation exposure and c) how these experiences affect the students' perception of individual and overall team performance.

Actions, Methods, Interventions:

Learning Objectives:

Learning objectives that were developed for the students participating in this module are based on the specific interprofessional collaborative (IPC) practice core competency domains, developed in 2011 by an expert panel sponsored by the Interprofessional Education Collaborative (IPEC) objectives and include the following:

1. Function as a contributing member of the team caring for an acutely ill hospitalized patient.
2. Use effective verbal and nonverbal communication skills.
3. Accept responsibility for the care of their simulated patient and her outcome(s)
4. Formulate an appropriate and achievable plan of care that is consistent with the patient's and family's values and goals
5. Actively elicit input and incorporate treatment recommendations from other team members given the evolving clinical need
6. Demonstrate respect for others' roles and responsibilities.

Instructional Design:

A group prebrief introducing simulation planned and rules which is followed by concurrent activities: a) an acute care simulated patient scenario and b) a brief lecture followed by group activity utilizing a values and goals matrix to facilitate shared medical decision-making. The session concludes with a group debrief. There is an optional reflection that students are invited to participate in after the session ends.

Assessment Methods:

There are three main assessment instruments based on the validated Communication and Teamwork Skills (CATS) Assessment framework, a global assessment of readiness to practice and an optional student reflection.

Results:

Data collection utilizing CATS and global assessment is underway.

Student feedback is reflective, insightful and promotes further adaptation of this acute care simulated patient scenario. Salient points include a focus on inclusion of all team members, student self-criticism based on performance and the importance of communication.

Lessons Learned:

Counter measures are considered for adjustments in the structure and function of the experience weekly. Based on student feedback thus far, unique lessons learned include an expected response to the cognitive and emotional load of managing a seriously ill patient.

Adjustment: The final team debrief was modified to include content on self-care, including dual management of the cognitive and emotional load, stress response leading to either a good or bad outcome (compassion fatigue, burnout or resilience) types of coping mechanisms (active versus avoidance), and finding balance.

Future Application and Next Steps:

Simulation has a proven track record for positive team learning despite certain known challenges, which is thus far supported in these findings. Of particular relevance, students may benefit from training in health professional self-care and coping mechanisms in acute patient care scenarios. With continued student feedback and observation data, further simulation scenarios may be developed. The process for simulation design of this module as well as identification of logistical and design challenges will be addressed in a distributable format to others who are committed to using simulation in their team-based IPE experiences.

Entrustment of Medical Students with Supervised Procedures during Core Clerkships

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Background: Increased regulations have limited medical student participation in patient care, including procedures, as evidenced by declining student participation in supervised bedside procedures over the past 25 years. Program directors across specialties and graduates themselves have expressed concerns over poor preparation for internship. Meanwhile, patient care and safety is being compromised. The authors sought to understand medical student entrustment with procedures and variances in entrustment between core clerkships (family medicine, internal medicine, neurology, obstetrics/gynecology, pediatrics, psychiatry, surgery) during the first clinical year.

Methods: An online survey was distributed to students who had completed their first clinical year at the University of Michigan Medical School (UMMS). Students were queried on attitudes towards procedures, procedures they were exposed to and participated in, and factors important in enabling performance. Surrogates for entrustment were constructed including Participation Rate of Student ($PRS = \frac{\text{participated procedures}}{\text{exposed procedures}}$). Procedure complexity was incorporated through Procedure Difficulty Ratings (PDR) as assigned by clerkship directors. Entrustment was also measured through Procedure Difficulty score of Student ($PDS = \frac{(PDR \text{ participated})}{(PDR \text{ exposed})}$).

Results: 138 students responded for a 66% response rate. 90% of students wished they had performed more procedures. Students had higher entrustment – measured by procedure participation rate, PRS, and PDS – during procedural specialty clerkships (surgery, obstetrics/gynecology) than nonprocedural clerkships (PRS=70 versus 55; PDS=58 versus 45; $p < 0.001$). Entrustment was highest during surgery ($PRS_{SURG} \approx 74$ versus 31-63 for other clerkships, $p < 0.001$; $PDS_{SURG} \approx 67$ versus 26-51, $p < 0.001$) and lowest during pediatrics ($PRS_{PED} \approx 30$ versus 58-73 for family medicine, obstetrics/gynecology, and surgery, $p < 0.001$; $PDS_{PED} \approx 26$ versus 47-66 for obstetrics/gynecology and surgery, $p < 0.001$). Factors thought by students to be most important in enabling participation were supervisor characteristics of personality, approachability, and sense of educational responsibility; least important factors were a student's intended specialty, demonstration of leadership, and reputation.

Lessons Learned: Medical student participation in supervised procedures is essential to developing competent graduates prepared for internship. Students are entrusted with more during procedural clerkships, especially surgery. Target areas for increased participation were identified as procedures frequently performed by interns and to which students have high exposure. Ways to increase student performance are rotating on procedural teams, simulation, and “boot camp” rotations. Additionally, faculty and resident training may help foster safe teaching methods that increase student procedural performance and ultimately preparation for internship.

Future Directions: Study results can be utilized by UMMS clerkships to make informed curriculum changes to increase student participation in procedures. Further directions of study include comparisons of students' and residents' opinions of entrustment theory factors, the role of gender and personality and specialty selection in entrustment, and whether level of entrustment is correlated to student performance (i.e. grades).

Poster #300

Abstract Title:

Physicians and Behavioral Scientists Focus on Different, Yet Mutually Important Aspects of Communication and Physical Exam Skills in an Undergraduate Clinical Skills Course

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Background

The AAMC identifies the ability to perform a medical interview and physical examination (PE) as a core professional entrustable activity for all graduating medical students. Defining PE as “data gathering and patient interaction activity” emphasizes the importance of *content* and *process* aspects of these skills.¹ In undergraduate clinical skills courses (CSCs), interdisciplinary co-teaching by physicians and social behavioral scientists (SBSs) has emerged as an innovative teaching practice,² but little is known about how co-teachers operationalize instruction. This study sought to elicit and compare physician and SBS perspectives on co-teaching communication and PE skills to preclinical medical students.

Actions, Methods, or Intervention

This study, conducted at Brown University where a co-teaching model has been used in their CSC for more than 10 years, used a constructivist grounded theory approach with discourse analysis of CSC faculty interview transcripts. Sampling was purposive and aimed at maximal variation. Individual semi-structured interviews were conducted with 6 SBS and 6 physician faculty asking participants “What expertise do the faculty members bring to instruction on medical interviewing/PE skills? How is this expertise received by the co-teacher and by students?” Audiotapes were transcribed verbatim and analyzed using the constant comparative method. We utilized discourse analysis to determine if what SBS/physician faculty individually describe as contributing to instruction is what is observed by the other.

Results

Physician and SBS faculty emphasize different but complementary aspects of communication and PE skills. Physicians focus on *content*, targeting clinical reasoning, differential diagnosis, economy of movement, efficiency, synthesis, and technical skills. SBS focus on *process* emphasizing active listening, presence, non-verbal communication, rapport building, empathy, and patient comfort. An SBS co-teacher described the medical interview: “For the physician it’s bringing together that differential diagnosis, forming the synthesis of what you’re learning from the patient as you’re performing the interview. The wheels are turning in your head, trying to calculate what is going on, what diagnostically, what tests, what possibilities, what other information is needed... for (SBS) it’s that mindfulness of listening, active listening to the patient.” A physician co-teacher described the PE: “I’m looking for economy of movement, about performance of a move or technique...(SBS) will notice some little things

that I will not necessarily pick up on... 'I like how you held their hand when you were picking them up from the table. You patted them on the shoulder' ...whereas I am looking – did they place the stethoscope properly... or are they just going through the motions... The things that (SBS) points out are things that matter to people.”

Lessons Learned

Physician and SBS faculty appear to share a model of their complementary relationship, as they consistently articulate their relative contributions to teaching medical interviewing and PE skills. This study's results give us confidence that interdisciplinary co-teachers predictably deliver instruction on both content and process.

Further Application and Next Steps

Physician trainees must develop skills that allow them to arrive at evidenced-based differentials with technical precision while being patient-centered. This study suggests having both physician and SBS faculty promotes instruction in a holistic manner, honoring the importance of both. We propose that this model should be further studied for widespread implementation in clinical skills courses.

References:

1. Englander R, Flynn T, Call S, Carraccio C, Cleary L, Fulton T, Garrity M, Lieberman S, Lindeman B, Lyson ML, Minter RM, Rosenfield J, Thomas J, Wilson MC, Aschenbrenner CA. 2016. Toward Defining the Foundation of the MD Degree: Core Entrustable Professional Activities for Entering Residency. *Acad Med*. 2016 Oct;91(10):1352-1358
2. Taylor JS, Daniel M, George P, Warrior S, Dodd K, Dollase RH. Warren Alpert Medical School's Doctoring Program: A Comprehensive, Integrated Clinical Curriculum. *Med Health RI*. 2012; 95(10): 313-7.

Poster #305

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Title: Addressing Unconscious Bias in Standardized Patient Performance

Background

The science of unconscious bias is an emerging area of study that explores how the human brain's natural functioning influences people's perceptions, behaviors, and interactions with others.¹ Leading institutions around the country recognize the negative, and at times discriminatory, impact unconscious bias can have on its workforce and the people they serve. Michigan Medicine is currently training its staff to recognize and address unconscious bias in patient care, education, and research with colleagues, students, and patients. This includes the Standardized Patient Program at our medical school where standardized patients (SPs) are expected to be free of implicit bias as they portray designated patient roles in a consistent manner.

Actions, Methods, or Intervention

For medical students it is important to have the opportunity to practice taking a sexual history in a safe environment. We developed a sexual history case for first-year medical students to offer them this experience. SPs were trained to portray a 35-45-year-old father in a same sex marriage who is having difficulty with sexual dysfunction. SPs spent approximately 3 hours learning the case, practicing with their peers and SP Educators and receiving feedback prior to the real experience with our students.

Results

During training the SPs exhibited initial discomfort engaging in discussion about specific sexual behaviors. They sought clarification about same-sex sexual activities and appropriate language related to some of these practices. Despite role portrayal training, several SPs independently adopted stereotypical behavior and communication styles historically associated with gay men in the United States. For example, although SPs were instructed to dress professionally, they self-selected somewhat flamboyant and flashy outfits they thought appropriate to this role. This behavior was observed by faculty and SP educators both during the initial training as well as during interviews with students.

Lessons Learned

Bias is inherent in everyone, and providing explicit training to SPs in this area is necessary, especially as curricula begins to include more culturally sensitive topics, such as sexual orientation and gender identity. It is imperative to assess and address SP implicit and unconscious bias during and post-training to avoid any negative impact the formative and summative experiences for our students. SP training should include unconscious bias awareness training to mitigate SP unconscious bias.

Future Application and Next Steps

The Standardized Patient Program will be requiring all Standardized Patients to attend the University of Michigan's Office of Diversity, Equity and Inclusion's "Unconscious Bias in Everyday Life" training in 2017.

1. Staats, Cheryl, and Charles Patton. "State of the science: Implicit bias review 2013." Kirwan Institute for the Study of Race and Ethnicity 14 (2013): 129-142).

Surgery Olympics – An Opportunity for Medical Students to Learn Surgical Techniques and Gain Research Experience

Background:

SCRUBS is the University of Michigan Medical School's surgery interest group which is designed to expose first and second year medical students to various aspects of surgery. SCRUBS engages students by holding monthly dinners with surgical faculty, sponsoring informational lunch talks given by surgeons, and organizing workshops in the simulation center to give students an opportunity to practice their surgical skills. All of these events happen throughout the school year, and there is participation from both first and second year medical students.

Actions, Methods or Intervention:

In addition to the aforementioned events, SCRUBS also organizes a unique program called Surgery Olympics for students to participate in during the 10-week summer break between the first and second year of medical school. This program provides students with the opportunity to be a part of a team that focuses both on research and surgical techniques. Students are arranged in teams of 4-5 and are paired with one faculty mentor. Teams meet throughout the summer to collaborate on a shared research project. In addition, all students in the program are required to attend a simulation center session every other week, which is taught by surgical residents. At the end of the summer, there is a Surgery Olympics event where teams are graded on various surgical skills such as knot-tying, complex suturing, and laparoscopic skills. Teams are also required to present their research at the Department of Surgery Grand Rounds in the fall. The team with the highest rankings in both of these categories is deemed winner of the Surgery Olympics.

Results:

A survey was sent out to the 70 students who participated in the Surgery Olympics program, with a 30% survey response rate (n=21). Of the 21 respondents, 71.43% said their team published or were in the process of publishing an abstract and/or manuscript. On a scale from 1 to 5 (1=poor, 3=average, 5=advanced), students were asked to rate their surgical skills before and after the program. The mean rating at the start of the program was 1.29, while the mean rating after completing the program was 2.62. Of the 21 respondents, 66.7% (n=14) rated their experience as average, good, or great.

Lessons Learned:

Overall the Surgery Olympics program was beneficial for the majority of students. Many teams were productive in their research and students' surgical skills improved.

Future Applications and Next Steps:

We hope to have more faculty mentors for the program in the future so that research teams can be smaller and so that more students can participate in the program.

The Interrupted Learner – How Distractions During Live and Video Lectures Influence Learning Outcomes

Michael Hortsch, Andrew H. Zureick, Jesse Burk-Rafel, and Joel Purkiss
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Background: New instructional technologies have been increasingly incorporated into the professional school learning environment, including lecture video recordings as a substitute for live lecture attendance. The literature presents varying conclusions regarding how students accept this alternative experience and how it impacts their learning success. A previous study reported that histology learning success at the UMMS was positively correlated with live lecture attendance and negatively correlated with lecture video use (Selvig et al., *Anat. Sci. Educ.*, 8:1-11, 2015).

Methods: In this multi-year study, three cohorts of University of Michigan first-year medical students were surveyed (n = 439 respondents) regarding lecture attendance and video usage, focusing on study behaviors that may influence learning outcomes in medical histology, as well as in several other disciplines (gross anatomy, biochemistry, and physiology).

Results: We found that students who reported always attending lectures had the highest average scores for all four disciplines. In contrast, choosing an inconsistent strategy for learning (i.e., mixing live attendance and video lectures) appeared to be associated with poorer performance. While this pattern was consistent across all four disciplines, only for histology performance was the observation statistically significant ($p < 0.001$). We also identified several behaviors that were negatively associated with histology course performance. Students who attended lectures and engaged in “non-lecture activities” (e.g., social media use) scored lower in histology when compared with students who did not engage in these activities. Similarly, students who watched lecture videos and reported being interrupted, feeling sleepy/losing focus, or engaging in “non-lecture activities” scored lower than their counterparts. Surprisingly, the speed with which students watched lecture videos had no significant effect on learning outcomes.

Lessons Learned: In this report we investigated the relationship between two modalities of lecture consumption (live vs. video) and learning outcomes in a large cohort of first-year medical students. Several distractors and specific student study behaviors were associated with detrimental student performance in a medical histology component, both among lecture attendees and video watchers.

Future Applications and Next Steps: Preliminary evidence suggests that choosing a consistent method for obtaining lecture information (i.e., always attending live lectures or always watching videos) may be associated with improved outcomes across multiple subject areas. These findings highlight the need for continued study of learning outcomes related to live versus video recorded lectures, as well as study behaviors that threaten student success.

The Effect of Changes to an Integrated Medicinal Chemistry/Pharmacology Course Series on Student Performance and Satisfaction

Zeinab Abdallah PharmD Candidate, Souhad Bazzi PharmD Candidate, Mustapha Beleh, PhD, and George A. Garcia, PhD

Introduction: As part of the curricular revision initiated in the fall 2015 term at the University of Michigan College of Pharmacy, the Medicinal Chemistry and Pharmacology course series, Principles of Drug Action, were expanded from three to five semesters in a credit-neutral change. In addition, the drug assay lab was moved from the third year to the first year. The objective of these changes was to decompress the student workload and to better align the course topics with the therapeutics course series. Moving the drug assay lab to earlier in the curriculum provided students with background knowledge and practices that are necessary for success in other parts of the curriculum.

Methods: The study examined the effect of the changes on student performance and perceptions. Students' grades on exams covering the same topics were compared prior to (pre-) and after (post-) the introduction of the changes. Overall student performances in each course were also assessed. The percentages of students failing to receive a passing grade in each of the courses were also compared pre- and post-curricular change. Student perceptions about the changes were measured using end of term surveys, while the level of integration of each topic was evaluated using a short questionnaire at the end of each class session.

Results: Comparison of all exam grades pre- and post-curricular change revealed that students performed either significantly better post-change or were essentially the same. When examining the overall course scores, average grades improved significantly in each course post-change. The percentage of students failing these courses dropped as well. Responses from end of the term surveys showed that the majority of students felt that the changes are beneficial to their learning. Students felt most topics were well integrated and for a few of the topics, provided valuable information to improve integration.

Conclusions: Changes to the Principles of Drug Action course series resulted in improvement in student grades and a lower number of failing students. For the most part, students felt that the changes were beneficial and that the topics were well integrated.

Health Professional Education EHRS Simulator

Vaughn Williams, Patti Abbott, Seetha Monrad, Allen Flynn, Johmarx Patton, John Walsh, Amelia Newburg, Jen Stojan, Larry Gruppen, & Charles Friedman

Background

Electronic health record systems (EHRS) have been shown to produce a myriad of benefits, including increased adherence to guidelines, efficiency gains, decrease in medication errors, improved surveillance and response to public health emergencies, and enhanced communication⁽¹⁾. At the same time, the increasing adoption of EHRS has resulted in documented instances of negative unintended consequences due to technology-imposed changes in workflow and communication; improperly programmed or implemented systems; and poorly designed systems that fragment clinicians' cognitive processes⁽²⁾. Often referred to as e-iatrogenesis⁽³⁾, these types of technology-facilitated errors create threats to patient safety and interrupt the communications that are vital to high quality and safe care⁽⁴⁾. Grounded in the belief that EHRS and associated health IT are increasingly important resources for the practice of all professionals who interact in this space (and in light of the evidence of the impact that EHRS and other types of health IT has on workflow and communication) it is imperative that we prepare our students and faculty to safely adapt to, interact with, and improve EHRS collaboratively as members of healthcare and clinical work redesign teams. The sparsity of robust EHRS simulators for use in health professional education limit their use for these purposes.

At UM, we have been piloting a simulated EHRS called "VistA for Education" or VFE. The VFE version used in the UM pilots to date was one developed initially by the PI (Abbott) with support of the Office of the National Coordinator for Health IT (ONC) funding (1U24OC000013-01) in 2010, and brought to UM in 2012. The VFE simulated EHR platform is based on a version of the globally-deployed US Department of Veterans Affairs "VistA" system which is a mature, stable, and *open-sourced* electronic health record system frequently regarded as the nation's most successful EHR⁽⁹⁾. All data in VFE/EWV is synthetic (no PHI) yet realistic.

In the late spring of 2016 we decided to undertake a major revision to the VFE platform which would enhance the realism and allow us to move towards more distributed use of VFE at UM. During the fall of 2016, the team spent considerable time testing the new platform and working with content experts and educators to develop and load synthetic patients into VFE. In addition to the enhancements to content and functions of VFE, we also developed and successfully tested an extremely innovative method of moving VFE to the "cloud" and developed educational artifacts to guide medical students through a planned EHRS simulation experience. In January of 2017 we conducted a large pilot in the UM Medical School with 169 M2 students using the new VFE cloud-based platform.

Intervention

Over 4 days in January of 2017, we trained 169 second year (M2) preclinical medical students using VFE. The goal of the training was to expose preclinical students to realistic use of the EHRS in a simulated encounter in keeping with our overall goals to prepare our health professional students for the realities of safe clinical practice. Students were divided into 4 equivalent groups, and each group attended one 4-hour session. Each session was a combination of didactic and hands on exercises, followed by a graded homework assignment. The didactic component was very short, with approximately 10 minutes of presentation and discussion, followed by exercises to both orient students to the EHRS simulator and to emphasize the material covered in the discussion. The EHRS simulation exercises were designed and administered by the team, and included a "scavenger hunt", and a series of guided experiences in ordering, documenting, and other standard EHRS activities. The homework assignment required that students watch a video encounter between a physician and a standardized patient. Students were required to open the EHRS, examine the patient's data in the EHR simulator and modify the patient's record based on information gleaned from the videotaped encounter. Students participated in a survey immediately before and after the session. This study was reviewed by UM IRB and classified as exempt.

The surveys were short and were administered immediately pre and post to assess perceptions of the M2 students in their: 1.) comfort with using an EHRS; 2.) preparedness to use one in their clerkship; 3.) beliefs about strengths and weaknesses of the EHRS (in general); and 4.) a question about what percentage of data they believed should come from the EHRS versus from the patient directly. The post survey (only) also included several open-ended questions related to the student's beliefs about how errors occur in EHRS, barriers to updating a patients data in an EHRS (and their perceptions of personal responsibility in updating data), and how likely it might be for them to miss an error in the EHRS during their clerkships. A six-month post survey will be conducted in July of 2017 to assess perception changes after clinical experience.

This abstract will only report on a limited set of matched immediate pre and post intervention data focused on perceptions of comfort, readiness, and percentages of data from the EHRS versus the patient. The additional questions included in the post survey and the results of the six-month post survey will be reported elsewhere.

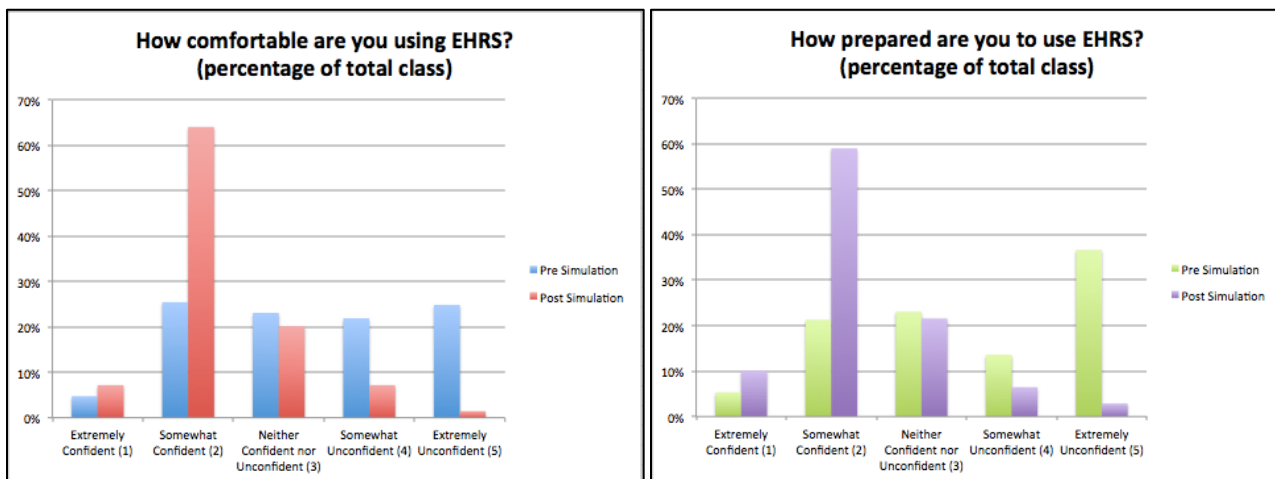
Results

Of the 169 students who participated, all 169 completed the pre-assessment survey. The post assessment survey was completed by 139 of the 169. Pairwise matching resulted in a final data set of 139 matched pre and post surveys for analysis.

The perceptions of the M2 students in regards to their *comfort* in using an EHRS in their clerkships significantly changed pre and post intervention. This question was rated on a scale of 1 to 5 (with 1 equaling very comfortable and 5 equaling very uncomfortable). A paired-samples t-test was conducted to compare the participant’s perceived comfort with using an EHRS immediately pre and post intervention. There was a significant difference in the scores for the pre-test level of comfort (M=3.29, SD=1.253) and post-test level of comfort (M=2.32, SD=.771); $t(138) = 7.90, p = .000$.

Similar results emerged from the question related to perceptions of *preparedness* to use an EHRS in the clerkship. Also rated on a scale of 1 to 5 (with 1 equaling very prepared and 5 equaling very unprepared), a paired sample t-test was conducted to assess the difference pre and post intervention. There was a significant difference in the scores for the pre-test perception of preparedness (M=3.44, SD=1.352) and post-test perception of preparedness (M=2.33, SD=.855); $t(138) = 8.354, p = .000$.

We found no significant differences in regards to the perceptions of M2 students and pre and post assessments of how much data during an encounter should come from the patient versus the EHRS, with students indicating ~62-63% of data should come from the patient.



Lessons learned

This preliminary analysis of the use of an EHRS simulator in a group of M2 students has revealed that exposure to VFE in a safe and protected environment, where exploration and error are expected, has positive effects. M2 students reported significantly higher levels of a sense of preparedness for use of the EHRS in their clinical clerkships and felt significantly more comfortable with the use of an EHRS in their clinical experiences. The lack of significant findings in regards to data origin (EHRS or the patient) may reflect entrenched beliefs characteristic of younger health professional students (i.e. the computer is always right). Deeper exploration and the use of more experienced medical students may reveal additional relationships.

Future Applications:

We will continue this work with a second larger scale study of medical students in the fall of 2017.

Architecting and Building an EHR Simulation Platform for Health Professional Education

John Walsh, Patti Abbott, Allen Flynn, Vaughn Williams, Johmarx Patton, Amelia Newburg, Seetha Monrad, Jen Stojan, Larry Gruppen, & Chuck Friedman

Background

The growth of electronic health record systems (EHRs) has resulted in large-scale changes to clinical practice¹ and therefore to the way in which we teach health professionals to address the challenging healthcare environment. To go beyond “buttonology”, which is simply teaching providers what buttons to push to perform certain functions in EHRs, transformative educational experiences are needed that deepen health professions’ students understanding of what EHRs do and how the effective use of EHRs impacts practice, care, quality, and communication. Unfortunately, training in this regard is difficult due to a lack of high fidelity EHRs educational systems. Training approaches that do exist are constrained by cost, proprietary controls, and a focus on “buttonology” (which button to push to complete a task).

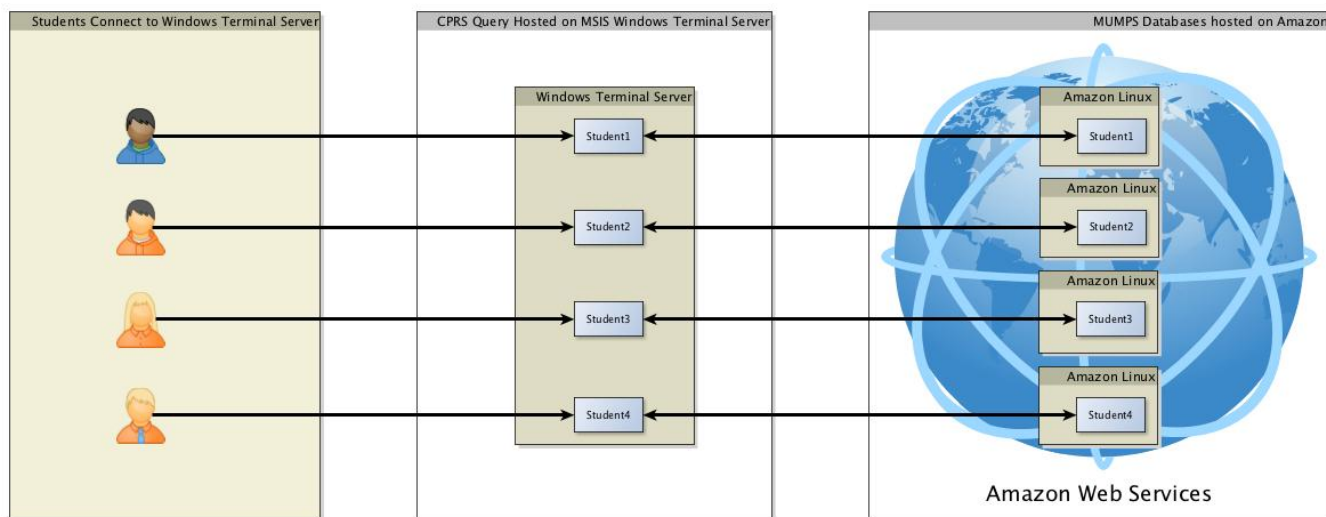
A 5-year line of research has illustrated the technical complexity of achieving the goal of comprehensively using an educational EHRs in health professional education. We have designed and built an EHRs simulation platform to begin to address these needs and challenges. Here we provide a description of the EHRs simulation platform, the rationale for its design, and a set of necessary features typically not found in EHRs today that are necessary to support their use as educational platforms.

Architecture and Platform Build Work

This work portrays the latest of three EHRs simulation platform architectures that have been deployed and used at the University of Michigan since 2013. We determined from previous work that the requirements for a workable EHRs simulation platform for education include: (a) web-based remote access, (b) compatibility with as many different types of student laptops and tablets as possible, (c) a capability to provide each student with his or her own personal, individualized simulated EHR performance experiences (d) straightforward maintenance, (e) cost-effectiveness, and (f) authenticity.

The EHRs Simulation Platform we architected, built, and tested in the classroom during 2016-17 meets all 5 requirements (a)-(e) above. Using the open source EHR WorldVista software, version 30a, a variant of the Department of Veterans Affairs (VA) EHRs, in conjunction with a Windows Terminal Server for supporting remote connections and authentication and individual student EHR servers from Amazon Web Services (AWS), an EHRs Simulation Platform was devised (Illustration 1).

Illustration 1:



In Figure 1, students, depicted on the left, use any network-enabled computer or tablet and the free Microsoft Remote Desktop software to connect remotely to the Windows Terminal Server, shown in the middle of the diagram. Then, once they are connected and logged into the Windows Terminal Server, students launch their own individual instances of the WorldVista EHR, which run on scalable servers within the Amazon Web Services cloud.

This latest architecture is manageable, scalable, and cost-effective. The steps in the process for deploying individual student instances of the EHRS are these: 1) A gold standard instance of the WorldVista EHR is carefully configured by the team to have needed synthetic patient records and other information. 2) Using Amazon Web Services images, Rundeck, Ansible and other automation developed by Health Information Technology and Services at the University of Michigan (UM), copies of the gold standard instance are made to run in student-specific servers automatically. Approximately 200 student EHR instances were deployed over 36 hours using this method. Each student EHR instance costs approximately \$15.00 to operate per month.

The existing EHRS platform architecture supports the following educational needs:

1. Academic integrity: Each student has his or her own password protected EHR instance
2. Grading of EHR performance work: Faculty and staff can access student EHR instances for the purposes of grading their work
3. Information security: Servers are backed-up automatically, access is restricted to authorized persons, and security best practices are applied to protect the platform from outside disruption.
4. Total content control: Faculty and staff have complete flexibility to build simulated patient records to suit a variety of educational objectives.
5. 24/7 access for students, staff, and faculty: Students wish to do their homework at will. Faculty wish to grade student work whenever they can find the time. The current system supports 24/7 access for these and other reasons.

More development is needed for the platform to support these additional educational needs:

1. Requisite clinical complexity: this requisite complexity includes challenges of keeping the simulator true to “real-world” experience, while allowing student trial and error. Documentation in a live EHRS cannot be reversed or erased, but an ideal learning simulator allows for a roll-back and start over.
2. Capabilities to “freeze” and “unfreeze” student EHR instances: Educators and students may need to retain a “patient record” as is and enable/disable student input into it for a single class, a week, or a term. Besides adding these capabilities, this also requires planning for storage capacity and archiving and logistical management.
3. Facilitation of assessment, grading, and longitudinal monitoring combined with support for learning analytics.

Lessons learned from using the latest EHRS Simulation Platform in the classroom

Our work over the last year in this technological intervention resulted in many lessons learned. We were able to successfully implement and test this under the load of 170 M2 students in January of 2017. We learned that the amount of RAM needed to be doubled, and that improper exiting of the simulator by students resulted in open instances continuing to run impacting system response time. We also learned that an effort such as this is much more than a technical intervention. It takes a village of experts in IT working closely with content experts and educators who understand the nuances of implementation and study of complex educational interventions. Finally, methods to automate many of the more mundane and tedious dimensions of this type of work are becoming clearer and will be rolled into the “next steps”.

Future Applications:

Our team was recently awarded a UM CRLT grant to continue and to enhance this work in the interprofessional context. The CRLT grant will result in interprofessional simulations in the Clinical Simulations labs at UM with mixed provider teams and standardized patients. We will advance the technical aspects of this work by exploring further efficiency gains including technical integration of a “data loader” program that will enable us to automatically inject synthetic patient data cases into the simulator. This effort will enable additional study and boost the capacity of the system to more closely align with educational objectives of diverse UM faculty and students.

¹ Black, A.D., Car, J., Pagliari, C., Anandan, C., Cresswell, K., Bokun, T., McKinstry, B., Procter, R., Majeed, A. and Sheikh, A., 2011. *The impact of eHealth on the quality and safety of health care: a systematic overview. PLoS Med*, 8(1), p.e1000387.

HPE Day Abstract

Abstract Category: Pedagogy

Incorporating Instructional Design into the Video Podcast Creation Process for Undergraduate Medical Education

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John Westfall, Jason Engling, Marc Stephens, and Aki Yao, Education Design Team
Education and Training Division – Education Design
Health Information Technology and Services

Background

In the fall of 2016, the University of Michigan Medical School began implementing a new curriculum which incorporated small group learning as a replacement for a traditional, lecture-based approach. As part of this change, faculty was asked to produce video podcasts (narrated PowerPoint presentations) to support the small group sessions. To produce these video podcasts, faculty were referred to the Education Design team, a unit within Health Information Technology and Services' Education and Training Division, for recording and instructional design assistance.

Actions, Methods, Intervention

A faculty development session was conducted by the Education Design team for curriculum leadership to inform faculty of the recording process and the instructional approaches used to create effective video podcasts. This session was provided in advance of the start of the fall term. During this session, faculty were provided with a brief overview of five instructional design principles from the work of Richard Mayer's multimedia learning theory (learning with pictures and words), a summary of key ideas pertaining to retrieval practice (strengthening memory by practicing recall of learned information and concepts), and the recording process used in the Education Design podcast studio.

Additionally, a PowerPoint template was made available to ensure visual consistency of the presentations. The recordings were then conducted throughout the academic year. For some of the recordings, practice quizzes were also created to support long-term retention of the information presented. During the academic year, the template was revised to include layouts to facilitate the application of instructional design techniques by the faculty authors and a video overview of the instructional design principles was created for faculty reference.

Results

Approximately forty-eight video podcasts and thirteen practice quizzes were created by twenty different faculty members for eight of the sequence courses offered in the 2016-2017 academic year. A PowerPoint design template was created and modified for faculty to make it easy for them to apply evidence-based instructional design principles to the creation and recording of their presentation; a short YouTube video describing the instructional design principles was created and published to support this process.

Lessons Learned

Faculty can easily apply a limited set of instructional design principles to improve their presentations with a combination of faculty development, individual coaching, and the use of structured templates. To ensure continuous quality improvement, materials and coaching strategies must be continually evaluated and modified throughout the production period.

Future Application & Next Steps

The Education Design team will work with Medical School faculty and staff to strengthen the content creation process by adding the Four-Component Instructional Design (4C/ID) model to the overall content design process. The 4C/ID model will allow the group to consider the design of podcasts relative to the overall sequence objectives and other learning and assessment modalities used.

TITLE

Sarah Tomlinson MD, Emily Mills MD, Marcia Perry MD, Margaret Wolff MD

Background: The American Board of Emergency Medicine has moved toward the use of milestones to evaluate emergency medicine resident performance. Milestones allow residents to be evaluated in many arenas such as their procedural abilities, medical knowledge, and communication skills. Assessment tools and evaluations throughout the residency program are looking to incorporate milestones in keeping with this change. Currently, the Pediatric Clinical Skills Exams in the Emergency Medicine residency are not using milestone-based assessments to gauge resident performance, and the current assessment tools are difficult to use by the instructors and are not reflective of the goals of each of the cases.

Actions: We first sought to create and implement a new assessment tool for use in the Pediatric Clinical Skills Exams for the first year emergency medicine residents. There were seven cases that required a new assessment tool. Cases were reviewed and critical actions were determined. A grading rubric was created using three main themes found in the milestones: Interpersonal Communication Skills, Medical Management, and Overall Performance. An overall score was then given based on their ability to correct perform the critical actions of each case and on their performance in each of the three categories. We then plan to test the inter-rater reliability of the assessment tool by using at least two reviewers for each resident's performance with a case.

Results: This new tool will be used for the Pediatric Clinical Skills Exams on March 28th, 2017 and results will be available at that time.

Lessons Learned: We suspect that the new assessment tool will be easier to use from an instructor standpoint, and will result in more standardized assessments by the instructors. Furthermore, we predict that residency program leadership will benefit from milestone-based assessments when incorporating resident performance into their overall evaluations.

Future Applications and Next Steps: Future efforts will be targeted at comparing performance on the Pediatric Clinical Skills Exams to performance on the pediatric portions of the In-Training Exam or Board Certification. A powerful assessment tool will allow program leadership to identify areas for improvement in the residency curriculum.

Poster #400

Medical students make the great escape: An innovative avenue for experiential leadership learning and team building

Christine Wu-M3, Heather Wagenschutz-Leadership, Justine Hein-MHome

Background

The need for effective physician leadership and team management in a tangled, complicated American health care system is gaining more attention ([Stringfellow, 2015](#)). As such there is an emerging push for leadership learning and team-based experiences during undergraduate medical education. How can leadership skills be intentionally developed or enhanced in order to create more physician leaders? One approach involves experiential, peer to peer learning ([Heifetz, 2009](#)). This method sits in contrast to the traditional rote learning of the lecture hall by putting the learner directly in touch with what is being studied (Kolb, 2015). “Escape Rooms” have become increasingly popular by providing an engaging opportunity for participants to work together, uncovering and solving clues within a specific time limit, to escape out of a room. Our curricular programs (Leadership and MHome) piloted the Escape Room to determine if the experience would help integrate leadership learning, application, and team building for the medical students.

Actions/Methods/Intervention

In December of 2016 students across all four classes (M1-M4) were invited to participate in an optional, pilot Escape Room leadership learning event with their respective M-Home Learning Community. Up to eight students in each of the four houses were randomly assigned to one of two Escape Room scenarios: Corporate Rage or Football Fury. While in the Escape Room, the M-Home teams worked to uncover and solve a series of puzzles with a time limit of 60 minutes. At the conclusion of the Escape Room, students completed a short written assessment and evaluation and engaged in a group debrief regarding the experience. Use of the five leadership competencies were evaluated and whether or not the peer to peer experience affected group connectivity in a positive, neutral, or negative way.

Results

Of the 27 students who participated, 26 completed the assessment and evaluation. Using a 5-point scale (1=poor, 2=okay, 3=good, 4=very good, 5=excellent), 92.3% of survey respondents reported the activity as an excellent experience with an average score of 4.92. All evaluations expressed that they would recommend the Escape Room as a team-building activity to their medical student peers. Furthermore, 58% of the students surveyed reported using all of the Leadership Competencies in the activity: Leading Self, Communication and Influence, Problem Solving, Teamwork, and Systems Thinking. The remaining students indicated using at least 3 of these Leadership Competencies. In the debrief and evaluation students expressed how the peer to peer activity facilitated the group connection. Examples included: “[being] thrown together with new people, having to be vulnerable and open to working together with a common mission!” and “I didn’t know these people before, and I definitely feel more connected to them now.” Students revealed how this experience applies to their future careers in medicine: “working as a team and using individual expertise to integrate and solve problems” and “working both independently... and together was a really great simulation... of working as a group in a healthcare team.”

Lessons Learned

The Escape Room event offers an experiential peer based learning opportunity for vertical integration across all classes in a dynamic and engaging environment distinct from the academic and clinical environments students are familiar with. Outcomes demonstrated that students found this experience to be a fun and meaningful approach to learning about, and applying, leadership skills as well as how they could collectively problem-solve in a high-pressure situation. Common themes that emerged that were applicable to students’ personal and professional development included open communication, delegating and sharing responsibilities, shifting leadership and team fluidity, and the necessity of sharing individuals’ strengths for the team’s success. Students categorically enjoyed the Escape Room as it

encouraged experiential leadership learning and team building with their peers, and promoted the implementation and translation of their experiences to their medical careers.

Future Applications/Next Steps

Limitations in this pilot trial included self-selected groups which may increase the odds that participants were more invested in learning about leadership and teamwork development. Since all four teams successfully escaped in time (completed the challenge) this could also potentially impact the evaluations in a positive way. The next steps are to provide a similar opportunity with twice the number of students. Groups will, again, be organized by M-Home houses with equal class distribution to continue building connections in the preformed communities. An exit assessment and evaluation with a student led group discussion will also be performed in order to analyze lessons learned, leadership competencies utilized, effect on group connectivity, and applicability to medicine.

References

Stringfellow TD, Rohrer RM, Loewenthal L, Gorrard-Smith C, Sheriff IHN, Armit K, Lees PD, Spurgeon PC. Defining the structure of undergraduate medical leadership and management teaching and assessment in the UK. *Medical Teacher* 2015;37 (8):747-754.

Heifetz R, Grashow A, Linsky M. (2009) *The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World*. Boston: Harvard Business Press.

Sling Health – Students Reforming Medical Innovation and Training

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Abstract:

Sling Health - Ann Arbor is a student-led medical technology incubator at the University of Michigan that brings together multidisciplinary teams of students to develop and implement new biomedical technologies. Each Sling Health team comprises of medical, engineering, business, and law students who bring their expertise to tackle a medical problem during the course of a school year. This experiential platform is a chapter of the nationally-growing Sling Health network that is able to support hundreds of students nationally. Our chapter provides teams with free training, mentor access, facilities, funding, and legal support. With this support, teams brainstorm and vet clinical needs while considering intellectual property and regulatory environments. Using specific design implementation, the groups work toward building a prototype to be presented at the conclusion of the process. The groups also participate in design reviews throughout the course of the year that serve to evaluate their progress, give feedback, and provide funding for further innovation. Within this program, students learn the intricacies of medical entrepreneurship that involves intellectual property issues, engineering design challenges, and raising funding. Above all, students of all disciplines have an opportunity to collaborate with each other not only to foster interest in entrepreneurship, but also to gain the experience and skills necessary to push the needle on medical care throughout these projects and their future careers.



Poster #405

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Abstract Title: Actions Speak Louder: Social Justice Education at the University of Michigan Medical School

Background: In 2014, the Black Lives Matter movement sparked protests and national dialogue about racism and violence against communities of color. White Coats for Black Lives (WC4BL) was created as a national medical student organization devoted to embodying the responsibility of the institution of medicine to counteract systemic and interpersonal racism and its effects on the practice of medicine. In the fall of 2015, the University of Missouri's protest of racial injustice and the subsequent resignation of the university's president sparked students across the nation to courageously demand that their institutions create safe environments for students of color. WC4BL called for medical schools to show solidarity with Mizzou by having stimulating discussion about racism on National BlackOut Day, Wednesday November 18th. The Black Medical Association (BMA) took this opportunity to hold an interactive, educational program on systemic racism in the medical field for students, staff and faculty.

Action: BMA's executive board held a planning meeting to create a #MedStudents4Mizzou event that addressed the issue of unconscious bias at University of Michigan Medical School (UMMS). We publicized the event to the community at large through email and collected anonymous discussion questions through a google document. We welcomed all those who wanted to attend and were in accordance with our goal of having an open and honest discussion on Wednesday November 18th 2016 in Taubman Health Science Library 6215 from 3:00-4:30pm. We started the meeting by displaying online videos of the specific racially-motivated acts that took place at Mizzou. We then presented scientific data that demonstrates how bias affects healthcare outcomes, economic opportunities, and the mortality of certain minority groups. Members within BMA provided personal accounts of how their lives have been detrimentally affected by unconscious bias in the healthcare setting. The session then proceeded with discussion prompted by questions derived from the google document and a message of encouraging allyhood. Lastly, the attendees took a solidarity picture that was displayed on multiple media platforms.

Results: The event was well attended by UMMS faculty, staff, and students with over seventy attendees. Following the #MedStudents4Mizzou, WB4BL committee tripled its non-black membership. Follow-up events included a workshop on how race and socioeconomic status impact our work in a clinical environment from the UM Program on Intergroup Relations, as well as a collaboration with the UMMS Honor Council. WC4BL members were recruited to refine and create scenarios for first year medical students to explore when discussing professionalism in the clinical environment. In addition, UMMS joined the national WC4BL initiative #ActionsSpeakLouder and several UMMS students were featured in the online video that reiterated WC4BL resolute commitment to social justice in medicine. The Office of Health Equity and Inclusion (OHEI) also bolstered this work by hosting Dr. Mona Hanna-Attisha, the Hurley Medical Center pediatrician who uncovered elevated lead levels in Flint children following the water crisis. WC4BL advocated for university-sponsored identity training and OHEI partnered with admissions to deliver identity training to the UMMS class of 2020 during orientation.

Lessons Learned: As future physicians, it is our obligation to address bias that affects the health of certain patient populations. It is imperative to reinforce ways for colleagues to be active in response to social injustice and we must recognize the importance of dialogue of difficult topics. Encouraging allyhood and giving our peers practical ways to address the concerns of others in their community is empowering and helps advance health equity.

Future Steps: We will continue our partnership with the administration for future events regarding race through MHome and work to advocate for health equity through activism, involvement in WC4BL demonstrations, movie screenings, and discussions.

Poster #408

SafeMD: establishing a sexual assault awareness and education curriculum for medical students.

Background: Sexual assault is a pervasive issue that necessitates address by the medical community, including designing an effective curriculum to provide the knowledge for medical professionals to prevent sexual assault in their communities and provide healthcare to survivors of sexual assault.

Program Description or Study Design: Students at University of Michigan established SafeMD, a peer-led organization that addresses the shortcomings of both curricular and extra-curricular efforts to address sexual assault. To accomplish this mission, we developed education seminars, conducted a needs assessment and established an inter-graduate school alliance centered around sexual assault awareness and education.

Results: To educate our community, SafeMD launched two main programs: Allyhood Training and M1 Orientation. In Allyhood Training, medical students received education about the prevalence of sexual assault, the Sexual Assault Nurse Examiner program, and the neurobiology of trauma from experts in each field. During M1 orientation, first year medical students were provided with an overview of sexual assault and the resources available to medical students.

SafeMD also conducted a “Needs Assessment” by sending a survey to all preclinical medical students regarding sexual assault education. This allowed students to provide input on areas that both SafeMD and the medical school administration needed to address.

Lastly, SafeMD created an inter-graduate school collaborative known as SafeMichigan that allows for collaboration between graduate students working to improve education about sexual assault in their respective graduate schools.

Lessons Learned: SafeMD's work has shown the potential for students to organize and improve their own education about sexual assault through peer-led collaboration. Further, it shows student desire to be prepared to address sexual assault during their education and during their profession as a health care provider. Lastly, it shows the potential for collaboration between graduate students to share resources and provide opportunities for interschool education about sexual assault.

Future Applications and Next Steps: This work acts as a framework for other medical schools to adopt similar peer-led sexual assault awareness and prevention groups. With further development and assessment of this intervention, future physicians will be able to better support both those in the medical community and patients who have survived sexual assault.

References

1. Black, M. C., Basile, K. C., Breiding, M. J., Smith, S. G., Walters, M. L., Merrick, M. T., ... Stevens, M. R. (2011). The National Intimate Partner and Sexual Violence Survey: 2010 summary report. Retrieved from the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control:
http://www.cdc.gov/ViolencePrevention/pdf/NISVS_Report2010-a.pdf
2. Cantor, D., Fisher, B., Chibnall, S., Townsend, R., Lee, H., Bruce, C., and Thomas, G. (2015). Report on the AAU Campus Climate Survey on Sexual Assault and Sexual Misconduct. Rockville, MD: Westat.
3. Shahali, S., Mohammadi, E., Lamyian, M., Kashanian, M., Eslami, M., & Montazeri, A. (2016). Barriers to healthcare provision for victims of sexual assault: a grounded theory study. *Iranian Red Crescent Medical Journal*, 18(3).

Piazza in Medical Education: A Collaborative Q&A Platform for Preclinical Learning

Maxwell Spadafore*, Richard Mortensen, Nazanene Esfandiari, Seetha Monrad, Ryan Henyard

Background: In many medical schools, the majority of preclinical students do not physically attend lecture; instead, they stream recorded lecture videos. If these “streamers” have a question regarding a topic or lecture, they must ask it via email rather than directly. Questions over email, however, are a poor substitute for in-person questions. Email is private and decentralized; students do not know which questions have already been asked of the professor, and the answers they receive stay private unless students specifically make an effort to share answers with friends or broadcast them to the class, leaving some students uninformed. Email also removes the social discussion aspect of in-person questioning, as fellow students lose out on the opportunity to collaborate towards finding the solution.

Piazza™ is an online platform which is capable of providing a much more natural question-and-answer experience when compared to email. It provides an easy-to-navigate central repository for questions, with robust options for searching and organizing. It allows students to answer others’ questions collaboratively and in real-time, and it allows instructors to make their own responses or to endorse students’ correct answers. Questions can be posted anonymously, reducing the intimidation factor when working with professors. It is free to use, FERPA-compliant, and has found extensive use in undergraduate courses. Piazza, however, has not yet been employed in medical student education. Here, we detail the results of a two-week pilot of Piazza during the first year medical school (M1) Endocrine system sequence, and we provide usage statistics as well as a discussion of its advantages when compared to email.

Methods: The two M1 Endocrine Sequence course directors were given University-sponsored educational materials regarding Piazza and used a sandbox environment to familiarize themselves with the features one week before the pilot went live. On the first day of the pilot, students were given a fifteen-minute orientation to Piazza describing its functions and how to enroll, and they were told that if they preferred email they could still use it to communicate with professors. Although there were more than two lecturers for the sequence, only the two course directors answered questions on Piazza, as their expertise covered all topics presented. They tried to only address questions when a student had attempted an answer first, but if a question remained unanswered, they would answer directly. After the sequence finished, usage statistics were collected evaluating student and faculty participation along with question volume.

Results: Students actively participated in Piazza, with nearly one-quarter of the class (22%) logging in per day. Usage was highest in the two days directly preceding a quiz or exam and lowest on the weekends; question volume followed a similar pattern. A total of 47 questions were asked over the two weeks. Of these, 64% were answered first by students rather than instructors. Student-first responses were lowest on the weekends; if these were excluded the student-first response rate increased to 71%. The average time from question to response was 1.1 hours. The majority of questions were asked anonymously. Several students requested that the pilot continue into the following sequence.

Lessons Learned: Piazza can provide a more natural question-and-answer experience when compared to email. Student participation was high for a system that is only designed to be used on an as-needed basis. The number of questions answered first by students was particularly encouraging, as it demonstrated a level of student engagement that email cannot under any circumstances provide. Additionally, the crowdsourced answering separated question answers from professors’ busy schedules, allowing for a fast response time. Finally, the number of anonymous questions was higher than expected, indicating that student-professor interaction anxiety may depress question asking under an email-only system.

Future Applications and Next Steps: To further assess how Piazza can increase student engagement and enhance learning, students will be surveyed regarding their experience with the pilot. To deploy Piazza across all sequences, all course directors must be familiarized with the platform and consent to its usage, a significant obstacle. If this can be overcome, we hope to compare overall levels of student engagement and satisfaction with the curriculum between incoming M1s (who would have used Piazza from the beginning) and the current M1s (who would not have used Piazza in some sequences).

Doctors of Tomorrow: Enabling High School Students to Ignite Change Within Their Community

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Background:

Doctors of Tomorrow (DoT) is a partnership between the University of Michigan Medical School (UMMS) and Cass Technical High School (CTHS) in Detroit. This novel, student-led pipeline program was established in 2012 with a mission of improving diversity among medical students and physicians by inspiring and enabling underrepresented youth to pursue careers in medicine. Students are engaged in hands-on clinical experiences, collaborative health service projects in partnership with Detroit community organizations, and leadership development.

Actions, Methods or Intervention:

In Fall 2015, 34 high school students were divided into the following capstone groups: Health Inequity, Nutrition, Youth Violence, Obesity, and Hunger. Each group was paired with medical student mentors and a community partner. Over the course of the year, students collaborated with their peers and mentors to research their topics, develop an action plan, and apply critical thinking skills to execute viable solutions.

Results:

In Spring 2016, the capstone groups successfully carried out interventions within the CTHS community, including hosting a health fair, constructing a vertical garden, and leading a school-wide assembly on obesity prevention. Students displayed their accomplishments on posters and delivered oral presentations at an end-of-year symposium.

Lessons Learned:

The goal of the Community Health Capstone Projects was to help students explore public health issues within their community and empower them to become agents of change. They learned how to collaborate with community organizations and developed their professional skill sets in the process. Through this initiative, students gained a better understanding of healthcare challenges that impact urban cities and developed core competencies needed to address health disparities.

Future Applications and Next Steps:

Looking ahead, DoT plans to gauge the effectiveness of the capstones through surveys and focus groups, strengthen relationships with community partners, and collaborate with other medical schools to develop similar outreach programs.

Palliative and End-of-Life Care Education Needs of Nurses across Inpatient Care Settings

Background: Palliative care is an approach that improves the quality of life of patients (adults and children) and their families who are facing life-threatening illness from onset of diagnosis through the end-of-life. Education of nurses about Palliative/End-of-Life (EOL) Care is a high priority in health care settings. Nursing professionals may not always be adequately prepared to deliver quality palliative/EOL care to patients and families. The purpose of this study was to assess nurses' perceived competency regarding the provision of Palliative /EOL care to hospitalized patients.

Methods: This descriptive study surveyed the knowledge, attitudes and behaviors of in-patient nurses around seven palliative and end-of-life care domains using End-of-Life Care Questionnaire(EOLC-Q)(Montagnini, Smith and Balisterei, 2012). This instrument was validated for use in pediatric and adult intensive and acute care units. Nursing leadership from 25 pediatric and adult acute and intensive care units in a large, university setting agreed to invite their nursing staff to participate in the study. Data analyzed using SAS version 9.4. Means were calculated for each EOL domain subscale to identify areas of greatest perceived competency and deficiency. The potential differences for the pediatric and adult units in acute and intensive care settings for the EOL care domain subscales were calculated using a one-way ANOVA. Correlations were calculated to examine the relationship between demographic variables and mean scores of the EOL domain subscales. Open-ended responses were analyzed and grouped to add meaning to the quantitative data.

Results: Five-hundred eighty-three registered nurses completed the survey, comprised of 182 nurses from adult acute care units, 227 nurses from adult ICU units, 85 nurses from acute care pediatrics and 89 nurses from the pediatric ICU's, averaging a 27% (range = 6– 40%) unit response rate. Ninety-one percent of the nurses who participated in the study were female, and 9% male. Seventy-five percent of the nurses had a baccalaureate degree in nursing, with an average age of 38 years and an overall average of 8 years in current practice. Fifty-one percent of the pediatric ICU nurses had been in their current practice greater than 10 years, compared to 36% of the adult ICU nurses, 28% of the adult acute care nurses, and 38% of the pediatric acute care nurses. Frequency of contact with patients with life-limiting illnesses was significantly higher by nurses working in the adult ICU ($p < .0001$) compared to nurses on adult acute care units, but not for pediatric ICU and acute care nurses. Similarly, there was also a significant difference in number of conversations the adult ICU nurses had with patients/family members per month compared to the adult acute care nurses ($p < .0001$), but not for pediatric ICU and acute care nurses. Data analysis revealed that perceived competency in Palliative/EOL Care domains is significantly higher in the ICU nurses ($p < 0.0001$). Mean scores were significantly higher when nurses had greater than 10 years of experience ($p < 0.0001$). Open-ended responses indicated concerns regarding improved communication behaviors, decision-making, and facilitation of continuity of care.

Lessons Learned: This study expands on perceived palliative and EOL care competencies in knowledge, attitudes and behaviors of nurses who work with adult or pediatric patient populations in the intensive or acute care settings. The results indicate that ICU nurses generally perceive themselves to be more confident than acute care nurses in knowledge and comfort level

in caring for EOL patients, particularly related to patient and family support, decision-making and symptom management. Acute care nurses perceived that they were relatively competent with patient and family support, as well as symptom management. They perceived that more assistance is needed in developing behaviors related to helping patients'/family with decision-making and improving interdisciplinary and patient/family communication. Earlier palliative care consultation was also indicated to enhance patient EOL care. Additionally, support for staff coping with personal distress that came from caring for patients at the end of life was viewed as important in the adult settings. In contrast though, pediatric acute care nurses perceived adequate support, which may be indicative of a supportive pediatric palliative care team, and collegial /management support. The results provide guidance for development of Palliative/EOL Care nursing education programs tailored to address specific unit needs according to staff characteristics, patient population focus of care and acuity level of care.

Future Application and Next Steps: The results of this study are specific to our institution, but were congruent with what has been reported in the literature. A baseline needs assessment should be completed to identify unique needs to other institutions/units prior to implementing a palliative care education program. This study demonstrated that nursing educational needs regarding the domains of palliative and EOL care may be different according to patient population and acuity setting and related to demographic variables of staff (such as age or years in current practice). Nurses who work in adult and pediatric intensive care units may deal with EOL care more frequently in relation to symptom management, decision-making pertaining to life-saving technologies, and physician communication issues. Acute care adult and pediatric nurses may focus more on assisting the patient with transitions in care, facilitation of patient/family wishes and the need to promote continuity of care between in- and out-patient settings. All nursing units should have resources available to promote basic competencies in providing quality palliative and EOL care and have opportunities to receive staff support as needed.

Poster #702

Family Centered Rounds: A needs assessment of pediatric resident communication skills during family centered rounds

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Background:

Family centered rounds (FCR) has become an important focus in pediatrics and improves patient outcomes. The ACGME requires that residents provide family-centered patient care, and many institutions have implemented FCR as standard practice. However, there is often no formal training on appropriate FCR techniques. Simulation-based training has been used widely in medical education, but there have been no formalized studies evaluating its use in teaching FCR best practices to trainees. We used a first-time training event to measure participating trainees' perceived ability to present during FCR. Following initial training, trainees' clinical performances were observed and rated by trained parent-raters to identify outstanding learning needs of first-year pediatric residents.

Methods:

A multidisciplinary team consisting of attending physicians, residents, a psychologist, parent advisors, and a medical education researcher was assembled to develop a simulation-based program intended to support first-year pediatric residents as they learned communication skills during FCR. A randomly selected group of pediatric first-year residents ($n=10$) completed the simulation-based training, and completed a survey used to measure residents' *self-reported ability* to present during FCR.. The resident survey (Perceived) consisted of 10 items measuring residents' agreement with statements associated with their perceived ability to participate in FCR across 6 domains, all scored on 5-point Likert scales. Following training, these residents were observed during FCR in the clinical setting with patients and their families. Residents' communication skills were rated by trained parent-raters using a parallel

form (Observed), scored on 3-point ratings scales, ranging from 1 (No actions performed) to 3 (All actions performed), with an additional option, “I don’t know.” Perceived and Observed ratings and comments were reviewed for trends used to identify training gaps.

RESULTS

Residents’ self-reported most problematic domain to manage during FCR was *setting the agenda*, with a domain mean of 3.45/5.00 ($SD=0.86$). Low parent ratings in the clinical setting ($M=2.20/3.00$, $SD=0.61$) were consistent with residents’ self-reported low ability at *setting the agenda*. Parents also indicated *greeting and introduction* was associated with lower performance ratings, and residents’ lowest performance ratings in the clinical setting were associated with *greeting family members by name and requesting their preference for participation in FCR*, with a mean of 1.87 ($SD=0.17$), falling below rating of 2.00 (some actions performed), and consistent with parent comments. Global item mean was consistent with these findings, [$M=3.46$, $SD=0.51$], aligning with “This rounding experience reflected some values of patient and family-centered rounds, and resident could benefit from targeted feedback to refine their skills.” “Overall impression” domain mean was 2.44 ($SD=0.11$), aligning with “average” family experience perceived by parent-raters.

LESSONS LEARNED

This needs assessment has successfully identified areas of improvement for residents’ communication during family centered rounds.

FUTURE APPLICATIONS/NEXT STEPS:

These findings will be used to guide refinements of the associated simulation-based training program.

Table 1. Residents' *perceived* ability at performing aspects associated with patient and family centered (PFC) rounds using 5-point Likert scale, and parent-raters' *observed* resident ability to perform aspects scored on 3-point rating scale.

Domain aspect/item	Perceived Mean (SD) 1-5 scale (n=9)	Observed Mean (SD) 1-3 scale (n=25)
Greeting & Introduction	4.00 (0.77)	2.20 (0.61)
1. Greeting: Explain my role to patients and their families during PFC rounds	3.90 (1.07)	2.00 (0.17)
2. Greeting: Greet by family member(s) by name, <u>and</u> requesting preferences for participating in rounds	3.70 (0.80)	1.87 (0.17)
3. Greeting: Honor patient and family's preferences for inclusion in rounds	4.33 (0.69)	2.82 (0.08)
4. Inclusion: Minimize distractions and engage patient and family to keep them in rounding circle	4.00 (0.65)	2.76 (0.09)
Setting Agenda	3.45 (0.86)	2.22 (0.83)*
5. Setting agenda: Ask family members about their questions/concerns <i>prior</i> to rounding session	3.40 (1.31)	—
6. Setting agenda: Use family member(s)' responses to guide agenda of rounding session	3.50 (0.69)	—
7. Invite family: Solicit questions and ask for clarification from family members/ when appropriate, suggest plan to address unanswered questions	4.00 (0.65)	2.72 (0.11)
Involve Family	3.89 (0.60)	2.78 (0.10)
8. Involve family: Ask for family members' input about care/discharge plan	3.89 (0.90)	—
9. Involve family: When appropriate, change course of care to reflect family member(s)' input	3.89 (0.11)	—
10. Check-back/closure: Check back with family members to ensure they understood care plan and decision making, ensuring all questions/concerns addressed, and leaving only when all questions/concerns addressed	3.50 (0.71)	2.75 (0.11)

*items of domain combined into single item for Observed

Commented [DMR1]: Notable to METHODS: we had 1 resident who only participated in "pre" and a different resident who only participated in "observed" so dumped both with an n= 9 to try to get decent alignment of "perceived" vs "observed", hence the n=25 observations

ALTERNATIVE FIGURE TO TABLE 1. Shows same information. Not sure what format you prefer.

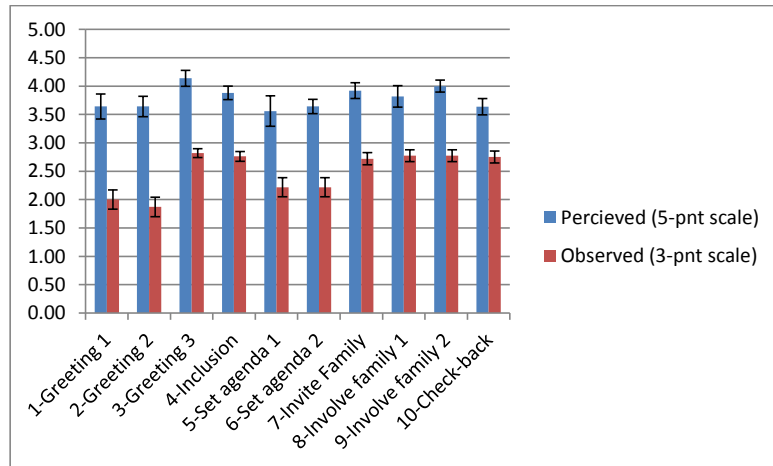


Table 2 on next page

Table 2. Mean ratings of overall impressions of family experience observed by parent-rater on 4-point Global rating and 3-point family overall impressions ratings.

Global Impressions	Observed Mean (SD)
Family member(s)' family centered rounds session	<i>(n=25)</i>
Global Rating (scored 1-4)	3.44 (.50)
Family Overall Impressions (scored 1-3)	2.41 (0.12)
comfort to participate in	2.33 (0.67)
amount of information shared with team during	2.41 (0.73)
level of engagement during	2.43 (0.77)
satisfaction with	2.47 (0.51)

Abstract

Background

Internal medicine residents often provide end-of-life (EOL) care for hospitalized patients and frequently engage in EOL discussions with critically ill patients. EOL care is a core curriculum for ACGME accreditation, although it is hypothesized that residents have less experience in EOL discussions in the primary care setting. There is evidence that patients prefer EOL discussions to occur earlier in the disease course with physicians that they have developed a relationship with over time. This points to these conversations ideally occurring more often in the primary care setting. However, the Institute of Medicine (IOM) reported deficiencies in office-based skills and the complex management of the elderly patient population in surveys of recent graduates of training programs across the United States. The IOM identified graduate medical education as responsible for improving the competence of the physician task force in the management of the aging US population, including EOL care.

Objective

To assess the current knowledge, attitudes and behaviors of internal medicine, medicine-pediatric, and family medicine residents in engaging in EOL discussions with patients in the inpatient and outpatient settings using self-assessment (perceived competence) and behavior assessment using self-reported behaviors and a simulated case scenario. To identify any knowledge gaps or patterns of behavior that could serve as a platform for a new curriculum in EOL discussions in the outpatient setting.

Design

Cross-sectional, online self-report survey

Subjects

Internal medicine, medicine-pediatrics, and family medicine resident physicians at a single university center

Results

There were 95 participants of a total of 197 current residents in all three training programs (48%). Residents reported significantly higher levels of confidence in having EOL discussions with patients that are in the hospital and clinically unstable. Additionally, residents felt significantly more confident identifying appropriate patients for EOL discussions in the inpatient setting compared to the clinic. The volume of EOL discussions during residency heavily favors the inpatient setting. However, most residents (96%) agree that it is important to have EOL discussions in the clinic setting with the appropriate patients. Many residents (81%) believe they would have more EOL discussions with specific training for the inpatient setting. Ninety percent of residents believe there is not enough time in clinic to engage in EOL discussions.

Discussion (Lessons learned)

The reasons for the confidence discrepancy between EOL discussions in the inpatient and outpatient setting are probably diverse. Most residents agree that the lack of training and lack of time in clinic are barriers. Interestingly, in the case scenario, residents favored building rapport with a new patient prior to engaging in EOL discussions, which highlights the importance of the patient-physician relationship from the resident's perspective. Better identification of clinic patients who are appropriate for EOL discussions and the ability to conduct such discussions in a timely yet effective manner are areas for improvement.

Next Steps

To improve the skills required to engage in meaningful EOL discussions with patients in the outpatient setting, a miniature resident curriculum will be designed addressing the identified barriers from the resident survey, including identification of appropriate patients, basic knowledge of standard EOL care, and communication techniques to engage in efficient yet meaningful conversations. This curriculum will be built in coordination with the general internal medicine and palliative care faculty, and will involve an interactive workshop(s) available to all internal medicine residents as a time to teach and practice the skills of EOL discussions in the outpatient setting. Following the workshop(s), a follow up survey will be distributed to assess potential change in confidence levels in various skills related to EOL discussions in the inpatient and outpatient settings.

HPE Day Abstract

Abstract Category: Patient-Centered Care

Books of Patient Stories: Empowering Patient Voices

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Education and Training Division - DocPub

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Background

Meaningful and relevant education is vital to the overall care of patients and their families. The more knowledge offered to patients about what they can expect, the better equipped they are to handle the complexities of their medical journey. However, medical information is only the technical part of the equation. Many Michigan Medicine departments facilitate patient-to-patient communications to create a way for new patients to understand their own medical situation. Patients—former and current—share how they and their families were affected and how their own journey was populated with unexpected challenges and opportunities. Patients educating patients is a powerful tool that should be leveraged in a more expansive way.

Patients sharing their stories is also an effective and efficient way for medical students to gain a better understanding of their patients and what they are feeling. Sometimes these insights can be as beneficial or more beneficial than textbook information, a lecture, or spending a few hours in the clinic. A book of patient stories can be a very valuable resource.

Actions, Methods, Intervention

The Documentation and Publishing (DocPub) unit within Health Information Technology and Services partners with the University Library's Michigan Publishing Services. Together they work with the Michigan Medicine faculty, staff, students, and other healthcare professionals to develop a process for U-M patients to use for sharing their stories through written text.

DocPub provides full editorial production services, including manuscript editing and formatting, and basic cover art design. We facilitate the publication of the finished product via multiple delivery channels, such as print and e-books, web-based versions, and mobile apps. The team has published eight collections of patient stories and has another four currently in development.

Results

Books of patient stories provide keen insights and accounts of actual experiences for the benefit of newly diagnosed patients and their families, as well as for medical professionals. Patients share their stories in a way intended to benefit other patients and showcase the excellent healthcare services provided by Michigan Medicine.

Patients Impacting Patients

Many patients share their stories with their visitors, family members, and the occasional medical staff member. However, when patients are willing to put their stories into written word, making them available inside Michigan Medicine and beyond, the story impact increases, and the patient authors, themselves, feel they are making important contributions to patient care. These books are used as educational tools to help newly diagnosed patients and their loved ones prepare for future treatment.

Medical Professionals' Impact on Patients

For medical students, the patient storybooks represent a supplemental educational tool, assisting them in learning appropriate patient interactions and bedside manner. Patients write about the impact their doctors and nurses have on them and their families, both when delivering emotional status updates and providing information about what they can expect going forward. These insights, as well as their experience with their conditions, provide a deeper understanding of the patient's journey, something that is not generally found in medical textbooks.

Lessons Learned

By working with various authors and patient storytellers, we have learned that patient stories are often powerfully honest and timeless. Sadly, we have lost a few of our patient authors over the years, but their voices endure through the impact of their stories on current and prospective patients.

We have also learned that patient stories are an engaging way to help clinical faculty and staff to understand their patients in a much more personal way, not just medical students. The Patient Education Awards Committee taught us that these books fill a gap in the available range of patient education materials.

The contributing patient authors are not the only ones to benefit from writing these books. The book editors who solicit and curate the stories, assemble the books and write and/or produce all of the other supplemental material in the books, know what an effort and accomplishment it is to create a patient storybook.

Organizationally, as we grow our publishing program, the work we have done on the books of patient stories has provided invaluable experience for the development of additional products and services—for us, for our Library partners, and for the faculty, staff, and students. We are now able to leverage this publishing expertise as we work on textbooks, journals, and various supporting materials for end-to-end medical education.

Future Application & Next Steps

Books of patient stories are a developing genre, and Michigan Medicine, as a top-tier institution, is ideally positioned to leverage this valuable tool for future generations of patients, healthcare workers, writers, and editors. Moving forward, we anticipate using current and cutting-edge technology to increase the presentation value and functionality of our books and to develop ancillary products, such as videos, to accompany them. The cross-campus partnership we have developed with our Library colleagues (and

other collaborators) will enable us to reach multiple distribution channels, thus expanding the visibility of the content and of the Michigan Medicine brand.

Abstract Title

Improving the Inter-Professional Oral Health Care Environment of a Federally Qualified Health Center

Background

Inter-professional care is critical to preventing dental caries in children. The Michigan Caries Prevention Program (MCP) is a Medicaid funded innovation grant aimed at improving the oral health of children by training medical providers in oral health assessment and prevention. Federally Qualified Health Centers (FQHC), especially those also engaged in the University's Community Based Dental Education (CBDE) program, offer a perfect model for sustainable inter-professional oral health education and care experiences.

Actions, Methods or Intervention

Implementation of a caries prevention program after training through MCP was assessed at a medical clinic in a FQHC/CBDE site. A 6-month pilot study was conducted encompassing 776 medical well-child visits for children ages 0-3 years. 207 parents attending medical visits with their children were surveyed about children's oral health risk factors, and provision rate data for caries screening and fluoride varnish (FV) application conducted by medical providers was collected. Number of medical-to-dental referrals was also assessed.

Results

Over 26% of the parents surveyed reported their children consume sugary drinks/snacks and do not brush their teeth twice daily with fluoride toothpaste. Medical providers documented the provision of an oral health screening (OHS) for 22% of all patients' ages 0-3 during medical well-child visits, and 19% received a FV treatment. During the pilot period, 117 patients of all ages were referred from the medical clinic to a dental home.

Lessons Learned

The current guidelines call for OHS and FV application to all children 0-3 in medical settings. These are reimbursed in the medical clinic and staff has been trained to incorporate these procedures to their workflow. Initial implementation suggests these procedures are not being uniformly incorporated into the workflow. It is possible that clinicians could be targeting OHS, FV and referrals only to patients with identified caries risk factors, yet the link between prevalence of risk factors and preventive and referral approaches needs to be further explored.

Future Application and Next Steps

The FQHC/CBDE is an ideal venue for dental and medical students to practice promotion of oral health in an IPC model. Increasing care provision rates in the medical clinic, improving patient education, and streamlining the referral process between clinics are all areas for improving patient-centered and efficient care in the clinic.

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Implementing a Developmentally-Focused Clinical Competency Committee for Assessment of Senior Medical Students

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Background: Since the introduction of the Accreditation Council for Graduate Medical Education's (ACGME) Next Accreditation System¹, graduate medical education (GME) programs have utilized a competency-based assessment model. Clinical competency committees (CCC) are charged with the management of residents' assessments. Assessment practices within undergraduate medical education (UME) are more variable. UME academic review boards primarily focus on struggling medical students identified by deficient academic performances and generally do not address competency based developmental assessments. Thus neither the learner, nor the GME program, has a sense of learner's competencies as they transition from UME to GME.

Methods: We piloted a CCC to oversee assessment of 48 senior medical students. The CCC reflected a developmental perspective, with the intent to assess and enhance learners' developmental trajectories. This is in contrast to a problem identification perspective, where the primary goal is to identify the struggling student.² Each student was asked to complete an online competency-based individual development plan (IDP). At least one member of the CCC, which included faculty and staff from the Dean's office, assessment and evaluation teams, and specialty-specific advisers, reviewed each student's performance data. The data included clinical grades and comments, USMLE scores, performance on a summative clinical comprehensive assessment, and the IDP. Meeting approximately bimonthly, the CCC discussed each student, developed a joint assessment, and generated formative feedback.

Results: Due to the large number of medical students, implementing CCC's within UME is logistically challenging. To maximize efficiency, it is critical to have a robust electronic system for capturing, synthesizing, and displaying student performance data. We developed an easily accessible, yet secure electronic dashboard which allowed CCC members to thoroughly and efficiently review each student's information. The online IDP, in conjunction with regular meetings with designated advisers, served as a centralized document for the CCC to offer formative feedback and for students to record reflections and develop an action plan. The CCC's emphasis on this iterative process reflected its focus on learner development.

Lessons Learned: We learned several lessons piloting this CCC. First and foremost, active and continual learner engagement is vital.³ While the CCC and designated adviser can provide comprehensive assessment and detailed formative feedback, the impetus is on the student to reflect on this information and develop an action plan. Similarly, faculty must also be engaged. As faculty members

vary in their experience with competency based assessment; providing training and utilizing milestones-based evaluations can help facilitate the process. Finally, establishing clear expectations and concrete consequences from the outset can help avoid confusion or conflict should deficiencies in student performance or professionalism arise.

Future Applications and Next Steps: A developmentally focused CCC for senior medical students is feasible and has the potential to bridge the gap between assessment practices in UME and GME. Facilitative technologies as well as faculty and student engagement were critical components for success. While it will be important to evaluate the efficacy of our CCC utilizing student outcomes, our pilot may serve as a framework for future efforts in implementing developmentally focused CCC's within UME.

References:

1. Nasca TJ, Philibert I, Brigham T, Flynn TC. The next GME accreditation system--rationale and benefits. *The New England journal of medicine* 2012;366:1051-6.
2. Hauer KE, Chesluk B, Iobst W, et al. Reviewing residents' competence: a qualitative study of the role of clinical competency committees in performance assessment. *Academic medicine : journal of the Association of American Medical Colleges* 2015;90:1084-92.
3. Holmboe ES, Sherbino J, Long DM, Swing SR, Frank JR. The role of assessment in competency-based medical education. *Medical teacher* 2010;32:676-82.

The Lecture Feedback Pilot: A New Role for Students in Medical Education
Ilana Fischer, Lynze Franko, Maureen Fausone, and Mary Oakley Strasser
University of Michigan Medical School

Background – Lectures are the cornerstone of pre-clinical medical education. At the University of Michigan Medical School (UMMS), the 15-20 hours of scheduled lectures each week easily eclipses the time allocated to all other instructional methods. To be effective, these lectures must (1) transmit relevant content in (2) a clear, easily followed format that is (3) appropriate for the audience’s baseline knowledge level.¹ However, students often lament that the third point is less than fully realized, leading to decreased clarity in the transmission of critical content. Medical school faculty are highly specialized experts and may overestimate or misperceive the student audience’s background knowledge.

Intervention – Working in teams of two, we reviewed the presentations given by participating lecturers including pre-clinical and clinical faculty, PhDs and MDs, and both new faculty and seasoned lecturers. After the initial review, we met with faculty to discuss potential pitfalls from the student perspective prior to delivery of the lecture to the class. For example, we highlighted words or images that introduced conceptually challenging content significantly above student baseline level. After each lecture, we provided standardized feedback with an assessment form using Likert scales to evaluate areas including: the extent to which students felt the presentation was contextualized within the organ sequence and whether the material was explicitly connected to previous foundational knowledge. Open-ended response forms allowed students reviewers to identify other areas of strength or difficulty in the lecture.

Results – Feedback from a short survey sent to five participating professors revealed the benefits of this program to improve lectures. Two thirds of faculty respondents indicated that the program helped them to understand their student’s level of knowledge prior to lecture, while others agreed that student feedback helped them to improve their lecture. All stated that student feedback helped them to improve subsequent lectures, and that they would recommend their colleagues participate as well. One respondent commented that the program was “very useful...rarely do we get the opportunity to have really detailed feedback on our presentations from the primary recipient (the student).”

Lessons Learned – We find that student feedback can help faculty to improve the effectiveness of lectures while teaching student reviewers to improve their analytical and communications skills by providing thoughtful, constructive feedback. Since participation in the pilot was completely voluntary, our results may reflect a biased sample of faculty who are particularly open to critique and welcoming of student feedback. Educators who could most benefit from a program such as this may not be as receptive or find feedback as useful.

Future Application and Next Steps – We hope to build a formal evaluation tool for lecture improvement for use by students that is practically useful and consistent with pedagogical research. If integrated into faculty and sequence evaluations, this form could be used as a continuous quality improvement tool for medical education.

¹ Kaufman David M. Applying educational theory in practice *BMJ* 2003; 326 : 213

Research Overview

Good Clinical Practice (GCP) training provides standardized instruction for clinical trials to ensure quality research is being conducted and human subjects are protected. GCP training is required for researchers conducting drug, device, and biologic clinical trials, and existing GCP training focuses on regulations for these kinds of trials. Recently the National Institutes of Health (NIH) expanded their definition of clinical trials to include studies with social and behavioral interventions and outcomes, and recommended that all researchers conducting federally-funded clinical trials complete GCP training. Although many of the principles in the existing GCP training programs are relevant to all types of clinical trials, the existing training programs do not adequately address the unique needs of social and behavioral researchers. As part of the Enhancing Clinical Research Professionals' Training and Qualification (ECRPTQ) project, a work group was formed that included investigators and study coordinators experienced in behavioral trials to ensure a core set of competencies and training in GCP would be created that was relevant to study teams. The resulting Social and Behavioral Best Practices eLearning course includes nine modules and is designed to enable learners to apply GCP principles to social and behavioral clinical trials. Pilot testing of the course is currently being conducted in five Clinical and Translational Science Award (CTSA) hubs.

Discipline/Track: Education/Mentoring/Professional Development

Authors: Christy Byks-Jazayeri, MFA, Susan L. Murphy ScD, OTR, Elizabeth W. Anderson, MPH, Angela Lyden, Jennifer A. Miner, MBA, Jordan Hahn, Brandon Lynn

Objective: Existing GCP training is geared primarily towards researchers conducting drug, device, or biologic clinical trials, and largely ignores the unique needs of researchers conducting social and behavioral clinical trials. The purpose of this project was to develop a comprehensive, relevant, interactive, and easy to administer GCP eLearning course for social and behavioral researchers.

Methods/Study Population: As part of the ECRPTQ project funded by the National Center for Advancing Translational Sciences (NCATS), a Social and Behavioral Work Group of approximately thirty experienced social and behavioral investigators and study coordinators was formed to develop GCP training for social and behavioral researchers. Existing GCP training programs were reviewed to identify relevant content that should be included as well as gaps specific to social and behavioral clinical trials where new content would need to be developed. Nine specific modules—Introduction, Research Protocol, Roles and Responsibilities, Informed Consent Communication, Confidentiality/Privacy, Recruitment/Retention, Participant Safety/Adverse Event Reporting, Quality Control/Assurance, and Research Misconduct—were identified by the work group and the content was mapped to competency domains defined by the ECRPTQ project, as well as International Council for Harmonisation (ICH) GCP principles. Several investigators and study coordinators were identified as content experts for each module topic. Working with an instructional designer, these experts defined learning objectives and outlined content relevant for both study coordinators and investigators for inclusion in the modules. The curriculum was developed using Articulate Storyline that is SCORM 1.2 compliant making the course usable to the widest audience. The course was designed to be administered on laptop or desktop computers and is accessible for individuals with hearing or viewing impairments. To maximize learning, instructional designers used creative treatments including: narration to guide learners or offer tips; short video scenarios to introduce topics; interactive activities, such as drag and drop games and “click to learn more information”; knowledge checks with feedback; resources, including downloadable job aids; end of module

quizzes, and documentation of course completion. The full curriculum takes 2-4 hours to complete, with individual modules taking 30 minutes to complete.

Results/Anticipated Results: Pilot testing to evaluate the effectiveness of the eLearning course is underway at five sites: University of Michigan, Boston University, University of Rochester, University of Florida, and SUNY Buffalo.

Discussion/Significance of Impact: This eLearning course provides relevant, comprehensive GCP training specifically for social and behavioral researchers. Unlike existing GCP training that is geared towards drug and device researchers, this course includes scenarios and examples that are relevant to social and behavioral researchers. The engaging, interactive nature of this course is designed to improve learning and retention, resulting in improved job performance. Additionally, the modules are designed for both investigators and clinical research coordinators, thus eliminating the need for different training modules for different study team members.

Grant funding source: This research was supported by the National Center for Advancing Translational Research grant # 3UL1TR000433-08S1 (Thomas Shanley, MD).

Authors conflict of interest: none

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Best Practices for Social and Behavioral Research: Developing a Competency-Based Elearning Course in Good Clinical Practice

Research Overview: (1500 character limit / current character count: 10500)

Training in Good Clinical Practice (GCP) was developed to provide instruction to study teams conducting trials on drugs, devices, and biologics to ensure that quality research was being conducted and human subjects were protected. This training has recently been recommended for all study teams with funded clinical trials from the National Institutes of Health (NIH). The definition of a clinical trial by the NIH has been expanded to include trials that have social and behavioral interventions and outcomes. Although many principles of GCP apply to all clinical trials, much of the training focuses on federal regulations that typically do not apply in social and behavioral research clinical trials. Thus there is a gap in relevant training for social and behavioral study teams. As part of the Enhancing Clinical Research Professionals' Training and Qualifications (ECRPTQ) project, funded by the National Center for Advancing Translational Science, a Social and Behavioral Work Group, including study investigators and coordinators experienced in behavioral trials, was formed with the primary purpose of ensuring that a core set of competencies and training in GCP would be relevant to study teams conducting behavioral trials. Thus the Social and Behavioral Research Best Practices e-Learning Course was developed. This competency-based elearning course was designed to enable learners to apply good clinical practice (GCP) principles to clinical research investigations involving human subjects as they specifically apply to social and behavioral research.

Discipline/Track: Education/Mentoring/Professional Development

Authors: Christy Byks-Jazayeri, MFA, Susan L. Murphy ScD, OTR, Elizabeth W. Anderson, MPH, Angela Lyden, Jennifer Miner, Jordan Hahn, Brandon Lynn

Objective: To create a relevant and practical elearning course on GCP for social and behavioral researchers.

Methods/Study Population: Many social and behavioral researchers are unfamiliar with GCP as they do not usually undergo this training unless they are involved in a drug or device clinical trial. The Social and Behavioral Work Group reviewed the Minimum Criteria for Good Clinical Practice (GCP) training from Transcelerate Biopharma (based upon the GCP principles from the International Committee on Harmonization) for relevancy to behavioral trials. The Work Group members discussed which criterion they felt was relevant or not relevant to behavioral clinical trials. The Work Group also reviewed existing GCP training and identified gaps, as well as reviewed the effectiveness, of the content specific to behavioral research. Reviewers also described design features that they liked and did not like about the experience of taking the course.

In order to develop appropriate training, it was necessary to better define the construct of GCP for social and behavioral researchers. For the purposes of the elearning course, GCP was renamed to 'best practices.' Despite differences, there is an overlap in the competencies required for research personnel of FDA-regulated trials and behavioral trials. In order to create best practices training, it was necessary to address the overlap of what all research personnel need to know and de-emphasize areas that were not relevant. Thus, the training required an introduction to the context of GCP and definition of terms specific for behavioral research personnel. In addition, because behavioral trials often have additional complexity in design and implementation, specific content needed to be addressed, such as treatment fidelity. Content for

best practices needed to focus on specific job skills for both investigators and clinical research coordinators. During content development, it was determined that all content would be relevant to both investigators and clinical research coordinators, so only one version of each module was developed. Content areas were defined via a mapping process to identify potential topics and link them to competency domains defined by the ECRPTQ project, as well as the ICH GCP principles. To do this, the Work Group team leads researched existing GCP and social and behavioral research training; reviewed several books on implementing GCP; examined educational materials on the principles of GCP from various sources; examined the results of the Transclerate discussion; and reviewed the current human subject training University of Michigan offers for social and behavioral research. Eight topic areas were selected for inclusion as modules in a training program: Research Protocol, Roles and Responsibilities, Informed Consent, Confidentiality/Privacy, Recruitment/Retention, Participant Safety/Adverse Event Reporting, Quality Control/Assurance, and Research Misconduct.

Content experts were identified for each module topic. Working with an instructional designer, these experts defined learning objectives and outlined content for inclusion in the modules. Because of the short timeline for completing the elearning course, a vendor was hired for course creation. In line with the course goals, the vendor placed a high level of importance on making the course material as job relevant as possible. This relevancy was expected to make a learning experience that was engaging and memorable, and far more likely to be applied on the job. The vendor used Cathy Moore's widely adopted Action Mapping process to accomplish this. The Action Mapping process starts with high level goals (learning objectives) and the specific behaviors (competencies) required to meet the learner's needs. Then the right type of training, simulation or practice was developed to mimic every one of those behaviors. The vendor considered the information, checklists, data and policies to support the activities.

Commented [BC1]: Should go under results?

Results/Anticipated Results: Learning objectives for each, around which content, activities, resources, and knowledge checks were developed:

Introduction

1. Define the role and context of International Conference on Harmonization (ICH) in providing guidelines for regulations.
2. Show how ICH guidelines are applied to social and behavioral research.
3. Define GCP.
4. List the goals of GCP.
5. Explain how GCP relates to the regulation of clinical trials in social and behavioral research.

Research Protocol

6. List the elements of a study protocol.
7. Explain the importance of standard operating procedures (SOPs).
8. Explain and evaluate treatment fidelity.
9. Recognize protocol violations, identify strategies to minimize them and prevent re-occurrence, and list reporting requirements.

Roles and Responsibilities

10. Compare the roles and responsibilities of the sponsor, institutional review board (IRB), research investigator, research coordinator, and other team members.

Informed Consent Communication

11. Outline the Informed Consent process.
12. List the required elements of informed consent process per GCP guidelines.
13. Identify key aspects of communication strategies for the consent process to ensure participants' (including vulnerable participants') rights, safety, and well-being are prioritized.

14. Critique informed consent communication between a study team member and participant to determine areas for improvement.

Confidentiality/Privacy

15. Differentiate concepts of confidentiality and privacy

16. Select strategies to ensure data are collected and managed in ways that assure participant confidentiality and privacy

17. Identify instances when confidentiality or privacy are compromised.

18. Identify when and to whom reporting is necessary

Recruitment/Retention

19. Identify potential recruitment strategies and best practices for recruitment

20. Assure methods are appropriate for achieving adequate participation of populations under-represented in research

21. Identify potential strategies for participant retention

Participant Safety/Adverse Event Reporting

22. Develop communication strategies for detecting adverse events that can be used by the entire study team

23. Develop common strategies for reporting adverse events

24. Define the role and responsibilities of a data safety and monitoring board in a behavioral clinical trial

Quality Control/Assurance

25. Explain the importance of quality control/assurance in a clinical trial.

26. Select strategies that can help systematically monitor participant progress through a study, including identifying incomplete/missing and out-of-range data.

27. Identify sources of bias that can affect data quality.

28. Assess how different biases can affect data quality using a case-based example.

Research Misconduct

29. Define research misconduct

30. Identify behavior that constitutes misconduct

31. Describe the process for reporting an instance of misconduct

32. Explain the consequences of research misconduct

Conclusion

Commented [BC2]: Cut?

Discussion/Significance of Impact: The curriculum was developed using Articulate Storyline that is SCORM 1.2 compliant. This would make the course usable to the widest audience. It was believed that at the time of course development (spring 2016) the majority of learners would take the course on a desktop or laptop, so the course was not designed for mobile devices (e.g., mobile phones, tablets). The course was made to accessible for hearing or viewing impairments. The full curriculum should take learners 2-4 hours to complete, with individual modules taking at the most 30 minutes.

To help maximize learning, creative treatments were used in the design of the training, including: a narrator who introduces the content and can guide the learner or offer tips; short video scenarios to introduce the topic; interactive activities, such as drag and drop games and click to learn more information; knowledge checks that will use correct and incorrect answer feedback will reinforce the correct answers; resources, including downloadable job aids; and end of module quizzes.

Commented [BC3]: Should this go under results?

At this time five sites are piloting the elearning course and evaluating its effectiveness. Preliminary results of this evaluation can be found at the poster "Best Practices for Social and Behavioral Research: A New Course to Address Good Clinical Practice and Preliminary Course Evaluation."

Grant funding source: This research was supported by the National Center for Advancing Translational Research grant # 3UL1TR000433-08S1 (Thomas Shanley, MD).

Authors conflict of interest: none

Info from ACTS abstract webpage: <http://www.actscience.org/2017abstracts>

Abstract Requirements

Abstracts submitted for Translational Science 2017 may represent work in progress or previously published research. If you wish your abstract to be considered for publication, it must be original research not published previously and not being considered for publication elsewhere. Edits to abstracts may be made up until submissions close.

All abstracts require the following pieces of information:

- Title (255 character limit, including spaces)
- Research overview (1500 characters limit, including spaces) (This will appear in the mobile app and online)

Session Type:

- **Addons**
- **Abstract Submission**
- Discipline
- Authors
- Objectives/Goals
- Methods/Study Population
- Results/Anticipated Results
- Discussion/Significance of Impact
- If funded, grant numbers or other funding source
- Authors' Conflict of Interest
- Like to be considered for oral presentation?

Important Dates

- **December 5:** Call for Abstracts opens
- **January 13:** Call for Abstracts closes
- **Mid-February:** All individuals will be notified of their acceptance status

The Call for Abstracts for Translational Science 2017 is now open! Please submit your abstract information below.

The call for abstracts closes at 11:59 pm eastern on January 13, 2017.

When entering in your abstract, note that:

- Edits can be made to your submission until the call for abstracts closes. The link to edit your abstract will be included in your submission confirmation email.
- All accepted oral abstract presenters will be required to sign the ACTS Oral Presentation Agreement in order to present Translational Science 2017. The agreement will be provided once selections have been made.
- In order to be considered for a BWF Award, the primary author must be a trainee and upload a CV. Applicants that are not trainees or applications without CVs will not be considered.

If you have any questions, please contact Translational Science 2017 at speakers@actscience.org.

Additional Information for Poster

Table 2. Examples of Behavioral Clinical Trials

Trial Example	Setting	Factors that may impact risk level	Use of interventionists	Fidelity tracking
intervention to prevent childhood behavior problems	School-based	Urban, high poverty sample	Trained teachers	Tracking of teacher delivery of intervention
Parenting intervention to reduce childhood obesity	Clinic setting	high-risk mothers who have experienced trauma	Social worker supervised by a psychologist	Sessions are videotaped
Brief Intervention due to elevated alcohol consumption at their annual physical	Interactive voice response (phone) intervention	people followed by physician	no	no
incentive programs to promote cigarette-smoking cessation (or cessation of other substance use) and reduce relapse rates.		Smokers and/or substance abusers Assessments typically include urine samples that are analyzed as measures of recent smoking	no	no
Physical therapy for sepsis patients	Hospital, inpatient	Medically unstable patients, intervention may be risky for them to participate	Trained PTs	yes
Rehabilitation for the reduction of tremors in MS	Clinic setting	Use of a mobile app to measure the degree of tremor pre and post test	Trained OTs	yes

Table 3. TransCelerate Criteria: Results of Survey and Group Discussion regarding Behavioral Trial Differences

	TransCelerate Criteria	N	Report of yes it applies	Comments from Group on how Behavioral trials are different
1	Investigator Qualifications and Agreements		% (n)	
	<ul style="list-style-type: none"> Investigator qualification (education, training, experience). Demonstrate evidence of adequate training (provide up-to-date CV). Awareness of and compliance with GCP and regulatory requirements. Investigational product familiarity. Allow for monitoring/auditing/inspection to enable sponsor/regulatory oversight. Introduce definitions of monitoring (1.38), audit(1.6) and inspection(1.29). Use of qualified support staff. Document delegation of duties to appropriately qualified persons. 	15	93% 14 93% 14 67% 10 7% 1 40% 6 47% 7 100% 15 87% 13	-No investigational product -No requirement to comply to GCP -Different methods of monitoring, audit, and inspection (may be different within behavioral trials depending on risk level of trial) -Sponsor/regulatory oversight is different
2	Adequate Resources			
	<ul style="list-style-type: none"> Potential to recruit suitable subjects. Sufficient time to conduct trial. Sufficient qualified staff and adequate facilities to conduct trial. Staff are adequately informed about protocol, IP and tasks related to the protocol. 	15	93% 14 93% 14 93% 14 80% 12	
3	Medical Care of Trial Subjects			
	<ul style="list-style-type: none"> Qualified physician or dentist who is an investigator or sub-investigator should be responsible for all trial related medical decisions. During and following the trial, the investigator/institution should ensure appropriate medical care for AEs and clinically significant lab deviations related to trial and inform subjects if medical care is needed for intercurrent illness. Physician to make a reasonable effort to ascertain the reasons for subject's premature withdrawal from the trial. 	15	27% 4 40% 6 33% 5	Trial-dependent -May not need a qualified physician, dentist, etc. for trial-related medical decisions -Ensuring appropriate care for AEs or lab deviations Ascertain reasons for a subject's premature withdrawal from a trial -Good for tracking purposes in behavioral trial, but maybe not for 'medical care' reasons
4	Communication with IRB/IEC			
	<ul style="list-style-type: none"> Definition of IRB (1.31) & IEC (1.27). 	15	93% 14 80% 12	-No investigational brochure required

	<ul style="list-style-type: none"> • Before trial begins, obtain written, dated approval/ favorable opinion for protocol and all documents provided to subjects (e.g. ICF, advertisements). • Provide a copy of Investigator's Brochure/updated IB. • Before and during the trial, provide all documents required by IRB/IEC for review and appropriate approval/ favorable opinion. 		7% 1 80% 12	-May be different level of communication depending on risk level of behavioral trial
5	Compliance with Protocol			
	<ul style="list-style-type: none"> • Conduct trial according to approved protocol, GCP and applicable regulatory requirements e.g. sufficient documentation to support subject meeting inclusion/exclusion criteria. • Document the acceptance to follow protocol in a protocol signature page or contract. • Protocol deviation process - no deviations or changes prior to sponsor and IRB/IEC approval/ favorable opinion. 	15	93% 14 60% 9 60% 9	-Not conduct trial according to regular GCP -Documenting acceptance to follow protocol in a protocol signature page (trial-specific, depends on study sponsor) -Protocol deviation may not need same level of reporting (i.e., documented and rationale submitted to sponsor)
6	Investigational Products			
	<ul style="list-style-type: none"> • Responsibility for IP (Investigational Product refer to 1.33) accountability & delegation of activities and supervision of an appropriately qualified person. • Documentation of delivery, inventory, dispensation, usage , disposal or return and reconciliation of all IP and other study medication. • Stored per requirements • Explanation of correct use of IP to subjects and periodic check for understanding/compliance. 	15	33% 5 20% 3 20% 3 20% 3	Not applicable
7	Randomization Procedures and Unblinding			
	<ul style="list-style-type: none"> • Follow the trial's randomization procedures. • Blinded trials: Promptly document and report to sponsor any premature unblinding. 	16	88% 14 38% 6	-May not need to unblind in a behavioral trial
8	Informed Consent of Trial Subjects			
	<ul style="list-style-type: none"> • Definition of Informed Consent (1.28). 	16	82% 13 94% 15	-Informed consent process not often feasible to be documented in

<ul style="list-style-type: none"> • Explain the informed consent process & informed consent form (ICF): – IRB/IEC written approval in advance of use for written consent and other written information to be provided to subjects. – Subject to be fully informed of all pertinent aspects of the trial prior to participation. – The informed consent discussion and form needs to include all relevant explanations. Refer or link to ICH 4.8.10. – Language used in oral and written information (ICF) should be understandable to subject or legal representative and impartial witness (where applicable). – Subject should have ample time to review the ICF and to ask any questions and receive answers before decision is made. – Subject should not be unduly influenced to participate. – ICF should be obtained/signed prior to a subject's participation in a trial (before any study procedures are performed). – Subject should be aware that withdrawal is possible at any time. – Subject should not be asked to waive legal rights or release investigator or sponsor from liability for negligence. – Written informed consent form must be updated/approved when new information is available that may be relevant to subject's consent. 	94% 15	<p>medical record since these trials may occur outside a clinical setting</p>
	94% 15	
	94% 15	
	94% 15	
	94% 15	
	94% 15	
	94% 15	
	94% 15	
	94% 15	
	88% 14	

	<p>Informed consent of special population:</p> <ul style="list-style-type: none"> • Refer to or add definition of Vulnerable Subjects (1.61) <ul style="list-style-type: none"> – When a subject (e.g. minor, incapacitated) can only be enrolled with the consent of the legal representative, the subject must be informed to the level of their understanding, provide assent (where this is feasible) and personally sign and date the consent form. – In emergency situations where the subject and legal representative are unable to consent, enrollment requires protective measures to be described in protocol or other IRB/IEC approved documents. Subject or legal representative should be informed as soon as possible and consent to continue and other consent as appropriate. – If the subject/legal representative are unable to read, an impartial witness must be present during the consent discussion and sign and date the consent form. • Informed Consent documentation: – The ICF should be signed and personally dated by the subject and/or the legal representative and by the person who conducted the consent. <ul style="list-style-type: none"> – A signed & dated copy of the ICF should be given to the subject or the legal representative (including any other written information provided to the subject). – The Informed Consent process should be documented in the medical record/source file (as well as documentation regarding communication of new information). 	16	<p>88% 14</p> <p>94% 15</p> <p>75% 12</p> <p>94% 15</p> <p>82% 13</p> <p>82% 13</p> <p>50% 8</p>	
9	Records and Reports			
	<ul style="list-style-type: none"> • Definition of Source Documents: The actual documents (originals) GCP glossary 1.52(brief). • Refer to or add definition of Source Data (1.51) • Definition of Essential Documents (section 8) 	16	<p>69% 11</p> <p>56% 9</p> <p>69% 11</p>	<p>-Source documents and essential documents may have specific meaning for drug trials not applicable/known to behavioral trials</p>

	<ul style="list-style-type: none"> • The need to maintain essential documents. Refer/link to section 8. • Retention of essential documents. • CRFs and all required reports (written or electronic) • Corrections are dated & initialed, do not obscure original entry and explained if necessary (applies to written and electronic changes/updates). Retain records of changes and corrections. • Financial aspects documented in an agreement between sponsor and investigator/institution • Direct access to all trial-related documents by the monitor, the auditor, the IRB/IEC or regulatory authority. 		75% 12 81% 13 75% 12 75% 12 75% 12	-Financial aspects in sponsor agreement appears to refer to drug trials only
10/13	Progress Reporting/ Final Reports			
	<ul style="list-style-type: none"> • Investigator submits written summaries of progress to IRB/IEC at least annually or as required. • Provide written reports to sponsor and IRB/IEC (and institution where required) of any significant changes affecting the study or increased risk to subjects. • Upon completion of trial, provide sponsor with all required reports. • Final report with a summary of trials & outcomes submitted to IRB/IEC and regulatory authorities as required. 	16	88% 14 81% 13 81% 13 75% 12	-Final report submitted to IRB/regulatory authorities may be trial-specific
11	Safety Reporting			
	<ul style="list-style-type: none"> • Adverse Event (AE) definition (1.2). • Refer to or add definition of ADR (1.1) and Unexpected ADR (1.60). • AE Reporting – All adverse events (AE) and/or laboratory abnormalities should be reported to the sponsor within the time period defined in protocol. • All serious adverse events (SAEs) should be reported immediately to the sponsor except for those SAEs that the protocol or other document (e.g. Investigator's Brochure) identifies as not needing immediate reporting 		6% 1 56% 9 56% 9	-ADR – adverse drug reaction is not applicable -Reporting of SAEs is likely to be on different timeline than in drug trials
12	Premature Termination or Suspension of Trial			

<ul style="list-style-type: none"> • Responsibility to promptly inform the trial subjects and ensure appropriate therapy and follow-up. Inform regulatory authorities when required. • Responsibility for communication of study termination or suspension of study to sponsor, IRB/IEC and institution as applicable, including a detailed written explanation. 	16	63% 10 75% 12	-may be trial-specific
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Figure 1. Conceptual Framework of How GCP Relates to Behavioral Clinical Trials

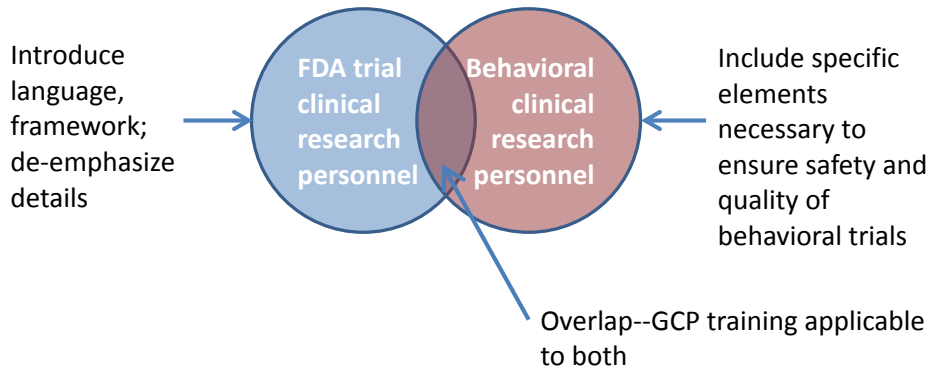


Table 4. Training Modules for Social and Behavioral Best Practices Course

Module Topics	Learning Objectives
Introduction	<i>By the end of this module, the participant will:</i> -Be familiar with the role of ICH in providing guidelines for regulations -Be able to define GCP and the goals of GCP -Be able to articulate how GCP relates to regulations of clinical trials in social and behavioral research
Research Protocol	-Describe elements of a research protocol -Articulate the importance of standard operating procedures -Gain knowledge in aspects of treatment fidelity as they apply to behavioral trials -Be familiar with protocol violations and how to handle them
Roles and Responsibilities	-Understand roles and responsibilities of the sponsor, irb, research investigator, and clinical research coordinator
Informed Consent	-Identify key aspects of the consent process that ensure participants rights, safety, and well-being are prioritized. -Analyze an informed consent process between study team member and participants to determine areas needing improvement
Confidentiality/Privacy	-Differentiate concepts of confidentiality and privacy -Select strategies to ensure confidentiality and privacy -Identify instances when confidentiality or privacy are compromised and when to report to IRB
Recruitment/Retention	-Identify best practices for recruitment including appropriate wording on flyers and in advertisements and ensuring adequate representation from women and diverse populations

	-identify strategies to retain participants
Participant Safety/Adverse Event Reporting	-Be familiar with aspects of seriousness and relatedness as they relate to an adverse event -Choose appropriate strategies to detect adverse events -Define the role of a data safety and monitoring board
Quality Control/Assurance	-Articulate the importance of quality assurance in a clinical trial -Select strategies that can help systematically track participant progress through a study -Define sources of bias that can affect data quality in a behavioral trial -Assess how different biases can affect data quality from a case-based example
Research Misconduct	-Define research misconduct and who this applies to -Describe the process for reporting an instance of misconduct -Name consequences of research misconduct

Typical Project Stages

Stage	What happens
Project Ignition meeting	Torrance Learning (TL) team and client define the project, need, parameters, objectives, course vibe, etc. In this stage, we often conduct an Action Mapping session where we outline the specific job tasks required of the learner and how we can build action-focused learning around these tasks.
Design document	Instructional Designer (ID) drafts design document that reflects expectations for course content, objectives, and production as determined during the Project Ignition. TL consults with client and the Subject Matter Experts (SMEs) on the development and refinement of this document. ID share with project team to make sure people understand client goals and objectives for training.
Course skeleton	ID consults with SMEs on course topics and subtopics as well as on organization of content delivery. ID drafts skeleton, which may or may not be included in the design document. SMEs and client (where appropriate) review and provide feedback.
Post Project Ignition reality check	TL and client revisit plans for course development, discussing any issues that crop up, changes in scope, timeline, course outline and content, etc. Team identifies changes to design doc and skeleton as well as next action steps.
Exploration / Immersion	ID works with client and/or SMEs to identify appropriate/most effective ways for ID to gain an in-depth understanding of target audience and business atmosphere (e.g., spend time at client locations, talk with target audience, talk with client's customers, etc.)

Course Design/ Content gathering	ID begins course content design and gathers needed content from SMEs. This is an iterative process, typically conducted in whatever media/fashions are easiest for the SME.
Alpha Development	Based on content from SMEs and what was determined in the Design Doc and follow-up call, the ID completes the first review draft (Alpha) of the course. This is often a PowerPoint file and allows for a lot of review and commentary by the client. There will likely be placeholder images and notes or open questions in the script for SMEs to review and answer. In some cases, these notes explicitly ask for feedback from SMEs, when possible. Otherwise, the script should be completed at this point, and the ID will have worked with the Course Builder (CB) to set up the graphic elements of each screen that can be determined at this point.
Alpha Review	<p>The project sponsor and SMEs review the alpha version of the course. They will have been given a deadline for reviewing and including comments, suggestions, and changes. SMEs provide feedback in different ways: notes/edits in the course files, on paper, via email, or in person or during a call.</p> <p>Ideally other stakeholders are included in this review, and even members of the target learner population.</p> <p>SMEs are expected to voice any concerns about any aspect of the course– from the wording or terminology of a concept in one screen to the direction the course is taking--at this point in the development process.</p> <p>The ID takes all SME feedback and makes appropriate changes to the course.</p> <p>We typically allow a week for the alpha review, although some clients and courses take longer, some take shorter.</p>
Beta Development	Based on comments from the alpha review and outcomes of the post-alpha meeting (if necessary), the ID and CB create the beta version of the course. This is a playable version of the course including (as appropriate for the course) audio voiceover, screen animations and interactions, and quizzing.
Beta Review	<p>The SMEs who reviewed the alpha version of the course review the beta version. Ideally, people from the target learner population and/or individuals with skills & experience one or two steps beyond this course are also included in the beta review. The ID provides guidelines and expectations for reviewing and a timeline.</p> <p>We typically allow a week for the beta review, although some clients and courses take longer, some take shorter.</p> <p>During beta review, a fully functional version of the course can be provided to the client's LMS team for testing. Our technical team works directly with the client's LMS team as needed to resolve any issues. This step is</p>

Commented [BC4]: And video?

	typically conducted much earlier in the process when we or the client are using courseware that are new to the environment, to give us time to resolve any issues.
Final Version Release	Based on the beta review, the CB puts the finishing touches on the course and releases the course to the client, based on LMS/hosting requirements.

Goal: Apply good best practices to social/behavioral research in clinical trials

- Give someone a tool.
- To create a learning tool that provides people information as it relates to GCP
- Replace the current training that is FDA regulated, which doesn't quite match SBR
- Promote awareness of the role of GCP in this type of trial
- Course can't be the most portable thing. Hosted on the University LMS.
- Push the boundary of traditional academic training. Don't make it dry!!!
- It's ok to be a little more luscious with the presentation.
- Keep the millennial in mind and their proclivity to get distracted by their phone.
- Hand draw elements seems to be something they like.
- Mock practice of the skills
- Use branding from NCATS, may or not be handed to us. Christy will follow up with Megan
- Aggregator of different resources.
- Define something that's not well defined.
- Learners will be suspicious of "non-credible" sources of information and social learning including Facebook pages and forums
- Asking a question can be seen as a sign of weakness among PIs
- Humor that makes the point is acceptable
- Examples have to have human subjects, cultural references will be broad.
- Our foundation is GCP, but we aren't really GCP because we are interpreting those for behavioral research
- Call them participants, not subjects
- Know the difference between privacy and confidentiality in a trial setting.
- "Mock consent" - being actually able to DO something
- Orient people, not teaching
- Potentially create Job Aid - here are some things that could make your life super complicated (international, audited). Make these downloadable documents.

Commented [BC5]: Like video scribe?

As a learner:

- Want to see examples. (varied research)
- Learners will have a different base knowledge.
- Information must be interesting and relevant.
- Academics make things complicated, no one will read instructions.
- Academics are not good at experiential knowledge
- Use a broader vocab when speaking to learner
- Projects are 1-5 years long
- Good PI = manages ppl well, can find the funding, knows the system, treats the people like they are appreciated, value their input in the protocols.

- Adverse event reporting, may not recognize the need to report these events
- Want to see examples of how course objectives apply to my job
- Behavioral research is so different, that learners may think the content doesn't apply to them; highlighting differences
- First group at UM that are going to be taking this - comes from the (new) NIH definition - they will have to take this training if they want the funding, but still will need the motivation
- Research assistant may also take this training

Mapping of principles to modules:

Several sources were used to come up with a mapping process.

- Reviewed several books on implementing GCP
- the Principles of GCP from various sources,
- the results of the transclerate survey, and the current human subject training UM offers for social and behavioral research
- NDAT categories in their online modules again to see what knowledge we might want to use from there.

Below is the mapping document with the 13 principles grouped. Took the module topics and added learning objectives. GCP has two main components- subject safety and data integrity.

We will look closely at the learning objectives and differentiate PI and research coordinators.

Ethics:

Principal #1 Clinical trials should be conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki, and that are consistent with GCP and the applicable regulatory requirement(s).

2 Before a trial is initiated, foreseeable risks and inconveniences should be weighed against the anticipated benefit for the individual trial subject and society. A trial should be initiated and continued only if the anticipated benefits justify the risks.

3 The rights, safety, and well-being of the trial subjects are the most important considerations and should prevail over interests of science and society.

Protocol and Science:

4 The available nonclinical and clinical information on an investigational product should be adequate to support the proposed clinical trial.

5 Clinical trials should be scientifically sound, and described in a clear, detailed protocol.

Responsibilities:

6 A trial should be conducted in compliance with the protocol that has received prior institutional review board (IRB)/independent ethics committee (IEC) approval/favorable opinion.

Commented [AL6]: Protocol doesn't seem to go here. Call it science and study justification or preliminary data

Commented [AL7]: Roles and responsibilities?

7 The medical care given to, and medical decisions made on behalf of, subjects should always be the responsibility of a qualified physician or, when appropriate, of a qualified dentist.

8 Each individual involved in conducting a trial should be qualified by education, training, and experience to perform his or her respective task(s).

Informed Consent:

9 Freely given informed consent should be obtained from every subject prior to clinical trial participation.

10 All clinical trial information should be recorded, handled, and stored in a way that allows its accurate reporting, interpretation, and verification.

11 The confidentiality of records that could identify subjects should be protected, respecting the privacy and confidentiality rules in accordance with the applicable regulatory requirement(s).

Investigational Products:

12 Investigational products should be manufactured, handled, and stored in accordance with applicable good manufacturing practice (GMP). They should be used in accordance with the approved protocol.

Quality control/Assurance:

13 Systems with procedures that assure the quality of every aspect of the trial should be implemented

Module topics

Introduction- What is ICH? What is GCP and what are the goals? Why do we care about this? Purpose of the module. Focus on implementation of GCP principles.

Research Protocol-describe elements of research protocol, why important, SOPs, description of treatment, treatment fidelity? Examples of protocols? Protocol violation?

Roles and Responsibilities-sponsor, investigator, IRB, coordinator?

Informed Consent- module will be an adjunct to ethics training people take. More of how to do an appropriate informed consent according to research participants 'bill of rights'. Case scenario

Confidentiality/Privacy-security of written records, unique identifiers, locked offices, HIPAA privacy

Participant Safety/Adverse Event reporting- finding AEs-review data regularly for AEs and communicate with staff, assessing events for seriousness and relatedness, when to report to IRB, proposing changes to protocol, role of DSMBs

Quality control/assurance- keeping systems to track progress through the study and implementing study according to protocol. Blinding, compliance to protocol, Documentation/recordkeeping. There are essential documents, but I think this is not relevant for most studies.

Research Misconduct-what is it? Who to report it to? Consequences, Examples..

Recruitment and Retention- making sure person matches inclusion criteria, adequate representation of women and minorities, protection of vulnerable people, advertising and how flyers etc. could overpromise or focus on compensation, tips for retention (NDAT training has nice information on this)

Commented [AL8]: And Confidentiality

Commented [AL9]: Replacing this with Intervention Development right?

Commented [AL10]: Include mention of unique aspects related to projects with community partners (delineating roles); student assistants; educational interventions; briefly mention community settings in all sections as relevant – will give this more wide appeal..

Commented [AL11]: Susan Goid's work/slides for basics is great and we can ask her for one of her scenario's. Credit her...

Commented [AL12]: Long term retention

Commented [AL13]: Include the (updated) data by marsouki and others that (QRP) questionable research practices are common!

Module	Description of Content
Introduction	Define GCP, articulate how they relate to SBR
Roles and Responsibilities	Differentiate sponsor, IRB, PI, coordinator, others
Informed Content Process	Communication with patient ensuring rights, safety,
Confidentiality/Privacy	Differentiate confidentiality and privacy; strategies to ensure these in data collection/management
Research Protocol	elements of study protocol, SOPs, treatment fidelity, protocol violations
Recruitment/Retention	I.D. recruitment strategies and best practices; appropriate methods for those under-represented
Quality Control/Assurance	Strategies to monitor participant progress, i.d. sources of bias that affect data quality
Participant Safety/ Adverse Events	Systematic strategies for detecting AEs and reporting them, role of DSMB in behavioral trial
Research Misconduct	Define, I.D. behavior, reporting, consequences

Best Practices for Social and Behavioral Research: A New Course to Address Good Clinical Practice and Preliminary Course Evaluation

Research Overview:

Training in Good Clinical Practice (GCP) is expected for investigators conducting clinical trials on drugs, devices, and biologics to ensure research quality and protect human subjects. Recently issued policy by NIH establishes the expectation that all NIH-funded investigators and staff who are involved in the conduct, oversight, or management of clinical trials should be trained in Good Clinical Practice (GCP) including clinical trials that involve social and behavioral interventions and outcomes.¹ Although training modules/courses exist for GCP from various sources, a gap in training was determined for social and behavioral trials which at times are more complex than drug, device, and biologic trials and in which FDA regulations do not apply. The purpose of this study is to conduct a preliminary course evaluation of a recently-developed Best Practices e-learning Course for Social and Behavioral Research. It was developed as part of the Enhancing Clinical Research Professionals' Training and Qualifications (ECRPTQ) project, sponsored by the National Center for Advancing Translational Science. This competency-based course was developed in conjunction with representatives of several CTSA-funded institutions who have expertise in social and behavioral research. The preliminary evaluation of this e-learning course is currently being conducted at five institutions across the country to establish how participants report that the training has affected their work on social and behavioral clinical trials.

Discipline: Education/Mentoring/Professional Development

Authors: Susan Murphy, Christine Byks-Jazayeri, Brenda Eakin, Jordan Hahn, Brandon Lynn, Elias Samuels, Margarita Dubocovich, Wajeeh Bajwa

Objective: To conduct a preliminary evaluation of the Social and Behavioral Research Best Practices Course.

Methods/Study Population: Learners are sampled from five institutions: University of Michigan, University of Rochester, University of Florida, Boston University, and SUNY Buffalo. Learners who take the course and consent to be in the study receive a web link to a survey immediately after course completion and at 2-3 months follow up. In addition to demographic information, learners will report their perceptions of usefulness and relevance of the course to their job, their satisfaction with the course and associated job aids, and at follow-up, if and how the course impacted their work. Additional information will be collected from the learning management systems which host the course at each institution. The data collected will include the number of participants who take the course, the number who complete, how many times the course was attempted, and pass rates.

Results/Anticipated Results: We anticipate that several hundred learners will take the course by the end of our project. Of learners who agree to participate in the survey, we anticipate that they will find the course useful and relevant to social and behavioral clinical trials and will be satisfied with the course. Information including suggestions about missing content, items or

¹ <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-148.html>

content that were not extremely clear, or any other comments will be collected to iterate and expand the course.

Discussion/Significance of Impact: This course was developed to fill a gap in training in good clinical practice for social and behavioral research. An evaluation of how the training provided in the course impacts the jobs of learners is needed both to ensure that the most relevant information is included in the course as well as to identify ways that the training may contribute to the quality and safety of social and behavioral clinical trials.

Grant funding source: This research was supported by the National Center for Advancing Translational Research grant # 3UL1TR000433-08S1 (Thomas Shanley, MD).

Authors conflict of interest: none

A Comparison of USNWR and Doximity in Assessing Strength of Clinical Training

CL James, BS, MPH; CM Gilbert, BS; KM Black, BS; C Heisel, BS; AD Schuman, BA; R Reddy, MD.

Background

US News and World Report (USNWR) is a well known resource that publishes rankings of medical schools every year, and is frequently cited by pre-med applicants as an important influencer in selecting schools to apply to. Despite its prevalent use by applicants, there is criticism that the USNWR rankings produced are not objective and do not accurately represent the quality of medical programs. We present Doximity, a “social media website” that releases annual rankings of residency programs based on a survey of over 35,000 board-certified physicians. We propose using the Doximity rankings of each medical school’s residency programs as a surrogate for clinical training, creating an alternative rank list of medical schools based on clinical strength.

Actions, methods, or interventions

All data is publicly available online. We collected the USNWR Research (USNWR-R) rankings and all of the Doximity rankings of each school’s residency programs. We calculated both weighted and unweighted averages for each school based on these Doximity rankings, with the weight based on how many physicians enter each specialty through the annual residency match. We also created a core clerkship Doximity rank list by calculating an unweighted average using each school’s Doximity ranking in the traditional M3 clerkship rotations (Doximity-C). Schools were ranked lowest to highest based on the weighted, unweighted and clerkship averages. Schools that changed by more than 10 rankings as compared to USNWR-R were defined as schools that have a “significant change”. We also assessed ranks of NIH funding per medical school as well as average MCAT score.

Results

In comparing USNWR-R to weighted Doximity rankings, ten schools changed significantly. Comparing USNWR-R to unweighted Doximity rankings, twelve schools changed position significantly. Comparing USNWR-R and Doximity-C yielded twelve schools with significant differences between the two methodologies. We examined rank of NIH funding for the various comparisons listed above, there was no difference between methodologies. There was a difference in average MCAT scores between the different comparisons listed above.

Lessons learned

This study shows that there are differences in commonly used medical school ranking methodologies. USNWR-R provides a ranking of medical schools focused

highly on objective data such as research output and MCAT score of matriculants. Doximity ranks residency programs based largely on reputation and feedback from residents, theoretically assessing strength of clinical training. Our method presents an alternative strategy of ranking medical schools based on strength of clinical education.

Future steps

We know that applicants to both medical school and residency consider rankings and reputation in choosing where to apply. Based on the numerous significant differences demonstrated between ranking methodologies in this study, we feel that there is a need for a more holistic ranking method. Many medical school applicants do not consider or know how to assess the strength of the clinical education they will receive, we feel that our methodology provides a starting point toward developing such a system.

Education & Advocacy within Correctional Health:
Student Programs and Community Partnerships at the University of Michigan Medical School

Gregory T. Woods, BA, CCHP¹ and Claire Welsh, BA¹
¹*University of Michigan Medical School, Ann Arbor, MI*

Background

During the 2016-2017 academic year, first- and second-year medical students at the University of Michigan Medical School established Education & Advocacy within Correctional Health (EACH), a student interest group. One pillar of EACH is to expose medical students and professionals to the unique health needs of incarcerated and justice-involved individuals. Through partnerships with the Michigan Department of Corrections and Corizon Health, Inc., we have established student shadowing and facility tour programs to meet this aim.

Actions, Methods, or Intervention

- (1) Between October and December 2016, nine first- and second-year medical students shadowed a Corizon Health physician at the G. Robert Cotton Facility in Jackson, Michigan (MI). These one-on-one shifts lasted approximately three hours.
- (2) In January 2017, a group of 11 medical students and one graduate student participated in tours of the Women's Huron Valley Correctional Facility in Ypsilanti, MI. These tours were facilitated by the Michigan Department of Corrections.

Results

Survey respondents included students who participated in either shadowing (N=4) or facility tour (N=8) programs. For over half of the respondents, this opportunity marked their first visit to a correctional facility. Two prominent themes emerged from free-text responses about frustrations encountered during the visit: the motivations of healthcare professionals and correctional staff (N=5) and end-of-life care in the prison environment (N=4). Students felt it imperative (mean of 9.2 on a scale of one-to-ten) that medical students be exposed to correctional healthcare during their training.

Lessons Learned

While based on a convenience sample, our results demonstrate an eagerness to engage with the field of correctional healthcare and justice-involved patients during medical school. Survey responses also underscore the importance of creating a forum through which ethical dilemmas from the visit can be discussed and healthcare delivery questions can be further investigated.

Future Application and Next Steps

Members of the EACH leadership team plan to institute post-visit reflection sessions for students to debrief in either a group or one-on-one format. As our pilot programs expand and networks grow, we will prioritize interprofessional collaboration. Finally, our group will continue to advocate for the establishment of an institutional relationship between Michigan Medicine, the Michigan Department of Corrections, and Corizon Health.

“Agents for Change”: Fostering Senior Medical Students to Embark Upon an IMPACT-Focused Career

Shelgikar AV¹, Morgan HK², Kuo KW³, Braun C⁴, Englesbe MJ⁵, Daniel M⁶, Mangrulkar R⁷, Santen SA⁶

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Purpose: Future physicians must provide excellent clinical care and lead transformation in healthcare. Medical students need skills and experience necessary to cultivate a lifelong impact-focused career. The objective of this innovation was to determine if significantly increased flexibility in the 4th year, with mentorship, goal-setting and expectations, would provide structure for students to have an impact in the area of their interest.

Approach/Methods: All rising 4th year medical students at one medical school were invited to submit impact-centered proposals, resulting in 25 applications with presentations to curricular leadership; 9 were selected by the committee for the IMPACT program during the 4th year of medical school. Students selected a personally meaningful project, inspired by his/her career interests with the goal to positively contribute to society's health and wellness. Project domains included scientific discovery, hospital systems, community health, education, entrepreneurialism, and global health. Dedicated time for IMPACT was either scheduled as a distinct rotation or as a longitudinal experience. Each student was paired with a faculty mentor who helped guide project selection, progress, and completion. Students and faculty mentors met monthly to discuss the IMPACT project and to provide formative feedback on student performance, which was also assessed by the Competency Committee.

Results/Outcomes: IMPACT completion was defined as delivery of a capstone project. All nine IMPACT pilot students have either completed the project or are on-track for completion prior to graduation as assessed by the Competency Committee. Since IMPACT project selection was fully student-driven, project magnitude and related deliverables varied widely and reflected the diversity of students' interests. IMPACT projects included a medical poetry chapbook, a research-focused project including completing a Master of Research in the 4th year, and a community-based project targeting opioid abuse. IMPACT pilot students responded favorably to the curriculum, with positively reviewed features including individualized mentorship and ambitions to continue seeking impact-focused opportunities during residency training and beyond. Faculty mentors cited that the student-driven aspect fostered students' creativity in the development of their IMPACT projects. Challenges included standardized outcome assessment and altering requirements so students could complete both the IMPACT project and their 4th year curriculum.

Discussion: The diversity of student IMPACT projects underscored the importance of encouraging students to regard themselves as “Agents for Change.” However, IMPACT assessment criteria must be standardized enough to be applied to all students while being flexible enough to relate to a multitude of projects. Other programs have studied assessment of medical student performance in a capstone course,¹ though scant guidance exists on assessment of student-led capstone projects in undergraduate medical education. Future

iterations of the IMPACT program require reliable, valid assessment criteria, including forward-looking components to assess career trajectory.

Significance: A medical student-driven IMPACT project can be successfully completed alongside clinical responsibilities in the 4th year of medical school. The IMPACT program empowers students to cultivate their interests and contribute toward meaningful change in the health and well-being of patients and society. Development of standardized assessment criteria will facilitate wider use of an IMPACT-focused program within undergraduate medical education.

References:

1. Clay AS, Andolsek K, Grochowski CO, Engle DL, Chudgar SM. Using Transitional Year Milestones to Assess Graduating Medical Students' Skills During a Capstone Course. *J Grad Med Educ* 2015;7:658-62.

Professional Development Branches for Senior Medical Students

Shelgikar AV¹, Morgan HK², Kuo KW³, Braun C⁴, Englesbe MJ⁵, Heidelbaugh JJ⁶, Hughes D⁵, Klein K⁷, Maybaum J⁸, Stojan J³, Daniel M⁹, Mangrulkar R¹⁰, Santen SA⁹

1 Department of Neurology, 2 Departments of Obstetrics and Gynecology and Learning Health Sciences, 3 Department of Pediatrics, 4 Office of Medical Student Education, 5 Department of Surgery, 6 Department of Family Medicine, 7 Department of Radiology, 8 Department of Pharmacology, 9 Departments of Emergency Medicine and Learning Health Sciences, 10 Departments of Internal Medicine and Learning Health Sciences, University of Michigan, Ann Arbor

Purpose: The evolution of clinical medicine and patient care delivery requires that medical schools adapt accordingly to ensure that medical students are fully prepared to serve as physicians.¹ The University of Michigan Medical School has initiated a comprehensive curriculum redesign to address concerns with the current senior medical student curriculum, including (1) disconnection between basic science and clinical experiences (2) lack of constructive feedback to students (3) lack of schedule flexibility for students to pursue impact-focused projects to better society's health and well-being.

Approach/Methods: The new curriculum is akin to a tree, with foundational scientific knowledge and core clinical experiences in the trunk and individualized learning and career exploration in Professional Development Branches (Branches). The goals of the Branches are to achieve clinical excellence, develop further scientific understanding, and impact health beyond the individual patient. After completion of clerkships, students will ultimately enter into one of the following 18-month long Branches: Patients and Populations, Diagnostic and Therapeutic Technologies, Procedure-Based Care, Hospital and Systems-Based Care. Branch students have flexibility to create customized electives and dedicated time to pursue career-specific science. Patient-based scientific inquiry (PBSI), an intentional method to incorporate science, involves asking deep scientific questions, seeking out literature and expert consultants, and presenting findings to peers and faculty. Each Branch student is paired with a faculty Branch advisor who meets with each student monthly to discuss career goals, review rotation schedules, and provide individualized formative feedback. Branch students maintain individualized development plans (IDPs)² which springboard ongoing communication between Branch students and advisors. The Branches clinical competency committee provides objective oversight and review of the IDPs to ensure that all Branch students are on-track for graduation.

Results/Outcomes: The Branches have been piloted in phases with 13 students in 2015, 44 students in 2016 and 65 students in 2017. Branch students and advisors have spoken highly of the individualized mentorship within the Branches curriculum. Ongoing review of the IDPs by Branch students and their advisors facilitates a competency-based transition to residency. Students have also valued the flexibility to create electives tailored to their interests in the context of broader career goals and report increased confidence in their ability consult scientific literature.

Discussion: Logistical constraints with attempts to incorporate patient-based scientific inquiry ultimately led to the creation of dedicated time for deeper scientific thinking across all four Branches. Complexities include the administrative support required to successfully facilitate the curriculum and recruitment of Branch advisors as more students enroll in the Branches. As the

size of the Branches expands, more faculty learn specifics of the curriculum and subsequently participate as Branch advisors.

Significance: Professional Development Branches (Branches) encourage senior medical students to maximize their medical school experience with customized electives and the opportunity to achieve impact. Longitudinal relationships between Branch students and advisors cultivate meaningful mentorship and a context in which students can receive personalized feedback to help prepare for residency. This pilot curriculum may serve as a model to for senior medical students to master career-specific scientific knowledge and start an impact-focused career.

References:

1. Lypson ML, Woolliscroft JO, Roll LC, Spahlinger DA. Health Professions Education Must Change: What Educators Need to Know About the Changing Clinical Context. *Acad Med* 2016;91:602-.
2. Li ST, Burke AE. Individualized learning plans: basics and beyond. *Acad Pediatr* 2010;10:289-92.

The Educational Value of Working as a Medical Scribe

John E. Lowry

Saginaw Valley State University

Background:

There is a need to improve the knowledge acquisition and facilitate professional development of medical students. The purpose of this study is to present the benefits which medical students report from their medical scribe work experiences prior to medical school.

Methods:

Sixteen current medical students from five different medical schools participated in semi-structured interviews about their experiences as medical scribes prior to matriculating into medical school. Their responses were analyzed qualitatively using thematic analysis to discover the common themes in the data.

Results:

Medical students report a variety of educational, professional, and personal benefits from their medical scribe experiences. Many students reported being able to recall specific patient encounters while learning basic sciences and their applications. First year students reported reduced anxiety and increased confidence during simulated patient encounters, and advanced skill in documentation. Many students reported having many professional role models, and being able to do extensive career exploration before becoming a medical student. Other themes include developing stress/time management strategies, professional identity formation, academic and personal resilience, and an increased dedication to the profession. Every one of the participants strongly recommended the experience as a way to prepare for medical school.

Conclusions:

Working as a medical scribe has the potential to offer powerful learning experiences that can enhance undergraduate medical education. Through their experiences, former medical scribes report benefits in medical knowledge and professional development. Colleges of medicine may wish to include consideration for medical scribe experience in their admission policies, or look for ways to use medical scribe experiences in the medical school curriculum.

Future Applications and Next Steps:

More research is needed to learn more about the experiences of medical scribes. We need to discover more about what medical scribes learn, and how they learn. We need to examine the role of professional relationships with pre-medical students working with attending physicians, residents, and medical students. Workplace learning provides a rich framework for further studies in these areas.

Creating Leaders in Dentistry through a Dual Degree Program in Dentistry and Business:
The Student Perspective

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ABSTRACT

Objectives: The professional success of a dentist depends on a comprehensive skill set including competence in clinical dentistry, communication, critical thinking, decision making, and business acumen. Achieving these skills is challenging without strategic training, such as business education. Evidence from existing dual degree MD/MBA programs showed clear benefits for these programs' graduates. We hypothesize that a dual degree DDS/MBA program would provide similar benefits to dental graduates. The objectives were to measure current dental students' (a) interest in a dual-degree program in DDS/business, and (b) the perceived barriers and benefits of as well as needs/demand for business education at the University of Michigan - School of Dentistry (UMSoD). The role of background characteristics such as the respondents' gender was also explored.

Methods: A cross-sectional study of predoctoral DDS students at UMSoD was conducted, using paper and web-based surveys.

Results: Data were collected from 272 pre-doctoral dental students (D1: N=105/response rate=99%; D2s: N=97/94%; D3s: N=41/approximately 30%; D4s: N=29/approximately 25%). Nearly half of the respondents (43%) agreed that having a MBA or Master of Management (MM) degree would make them a better dentist; 69% agreed that UMSoD should offer a dual DDS/Business program; 50% reported they would strongly consider enrolling in a dual DDS/Business program; 39% reported that they would consider enrolling immediately; 46% reported that this degree option would have made them consider Michigan more positively when applying to dental school. However, 22% reported that undergoing a business program would be unnecessary for their scope of practice as a dentist; 18% had no interest in a business degree or dual DDS/MBA program; 64% reported they would rather enroll in a business program as a dentist. Male students valued business-related education higher and had more positive attitudes towards a dual-degree program than female students. Satisfaction with business-related education in the DDS curriculum decreased as year in the program increased.

Conclusions: There is significant interest and student-perceived need for a dental and business dual-degree program at UMSoD.