

The Initial Clinical Experience (ICE): A Novel Approach to Interprofessional Education through Early Immersion in Healthcare Teams

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Background:

The admissions interview is used to assess nonacademic characteristics by eliciting information about an applicant that is not easily discerned or verified through other aspects of the admissions process. However, interview scores are often biased by factors unrelated to the nonacademic characteristics of interest (Griffin & Wilson, 2010). Academic metrics have been shown to influence interviewers' assessment of applicants' nonacademic characteristics (Elam et al., 1991; Shaw et al., 1995). While studies suggest that academic metrics account for significant variance in interview scores, these studies were conducted two decades ago (Elam et al., 1991; Shaw et al., 1995), and this type of study has not been replicated since the introduction of the AAMC Advancing Holistic Review Initiative.

Actions, Methods, or Intervention:

At the University of Michigan Medical School (UMMS), we were concerned about the weight of the relative importance of applicants' undergraduate grade point averages (uGPAs) and Medical College Admission Test (MCAT) scores by our interviewers. To examine whether uGPA and MCAT scores significantly influenced interview scores, we removed these metrics from our admissions interviewers' files in 2013. We hypothesized that withholding these metrics from our interviewers' files would allow for a more balanced assessment process and a greater adherence to holistic methods of evaluation. This study examined academic and demographic predictors of interview scores for two applicant cohorts at the UMMS. In 2012, interviewers were provided applicants' uGPA and MCAT scores; in 2013, these academic metrics were withheld from interviewers' files. Hierarchical regression analysis was conducted to examine the influence of academic and demographic variables on overall interview scores for both cohorts.

Results:

When interviewers were provided uGPA and MCAT scores, academic metrics explained more variation in interview scores (9.7%) than when interviewers were blinded to these metrics (3%). Further analysis showed that the interaction between cohort and MCAT score was positive and statistically significant, indicating that the association between MCAT scores and interview scores was significantly stronger for the 2012 unblinded cohort compared to the 2013 blinded cohort ($\beta = .79, P < .05$). By contrast, uGPA had no main or interactive effects on interviewer scores.

Lessons Learned:

The results of our study suggest that interviewers' access to academic metrics influenced their interview scores. uGPA accounted for some variation in interview scores for both cohorts, but only MCAT scores significantly influenced interviewers' scores. Therefore, MCAT scores should be withheld from interviewers because interviewers should assess nonacademic characteristics independently from academic metrics. Blinding interviewers to academic metrics has the potential for a more holistic face-to-face evaluation of an applicant.

Future Application and Next Steps:

As we strive for equipoise in our holistic review, we must continue to examine various components of our admissions process. Future studies will examine other components of our revised interview and application process.

Assessment Variation of Medical Students in their Initial Clinical Experience

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Background:

Interprofessional collaboration is important for medical student education. As one of several institutions increasing this facet of medical education and moving it earlier in the curriculum, we endeavor to capture and assess student performance in this domain. However, identifying and implementing effective methods to do so remains an ongoing challenge.

Action, Methods:

At University of Michigan Medical School, we collected multisource assessments from multiple health professionals during our Initial Clinical Experience (ICE) course, a longitudinal course which exposes first-year students to team-based healthcare through interprofessional observation and interaction. Students were assessed by the professionals they interacted with on competencies for professionalism, communication skills, teamwork/inter-professionalism, and overall performance.

A total of 692 assessments were submitted for 164 enrolled students, by 11 different categories of health professionals. Students were assessed using a 9-point scale: Novice (1-2), Approaching Competent (3-4), Competent (5-6), Proficient at Intern Level Expert (7-8), and Senior-Resident Level (9). Assessments included orienting instructions, such as: "Typically, first-year students perform in the novice range – they have some understanding, approach tasks mechanistically without recognition of complexity, and need supervision." Despite such orientation, the mean overall score was 4.06.

Results:

A one-way ANOVA was conducted to examine association between assessor-group type and ICE overall student score. There association was statistically significant [$F(10, 681) = 9.99, p < .001$]. Mean scores from Medical Assistants (mean=5.52(sd=2.35)), Dietitians (4.45(2.31)) and Social Workers (4.12(2.40)) were highest. In contrast, Technicians (3.45(2.07), Faculty (2.96(1.74)), and Medical Students (2.57(1.74)) gave the lowest mean scores. Bonferroni-adjust post-hoc tests found many significant pairwise differences, e.g. Medical Assistants differed significantly from five other assessor-groups, and Medical Students differed significantly from two others.

Lessons Learned:

In our implementation of multisource assessment, health profession groups rated our first-year students differently. We note that students had varied experiences within the various ICE environments that may have influenced this association. We also received feedback for improvement, which has led to modification of our assessment processes. Feedback themes included: suggestions for the assessment instrument, student difficult in interpreting the meaning of scores, relevance of assessment items to the actual learning experience.

Next Steps:

There are logistical challenges to standardizing over 500 professionals to assessment of students. Yet interprofessional input is an important part of programmatic assessment for inter-professionalism. Having learned from our first attempts, we are modifying in response to feedback, and hope to develop further methods for assessing students' communication skills and professionalism within an inter-professional team-based healthcare environment.

Self-perceived Assessment of Knowledge, Attitudes and Behaviors about Palliative and EOL Care amongst Interdisciplinary Health Care Providers

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Background: Education of practicing health professionals about advanced illness care continues to be a high priority need in health care settings across the globe. Health professionals are often uncomfortable in addressing end-of-life concerns with patients and families, most likely the result of not having received adequate education about care of the dying. The Institute of Medicine has put forth core components of quality end-of-life care which should be provided to patients. The aims of this study are to assess health care professional's knowledge, attitudes, and behaviors regarding the provision of palliative and end-of-life to hospitalized patients.

Methods: This descriptive, mixed methods study surveyed health care providers (including physicians, nurses, social workers, pharmacists, chaplains, respiratory therapists, physical therapists, occupational therapists, and child life) around seven palliative and end-of-life care domains using the End-of-Life Questionnaire (EOLQ) developed by Montagnini, Smith and Balistreri (2012). This survey consists of 28 specific questions on knowledge, skills and attitudes related to palliative and end-of-life care. Additionally, there were demographic questions, and 4 open-ended questions to ascertain issues deemed important by participants. The survey was distributed electronically via email to all interdisciplinary health care providers on 28 pediatric and adult hospital units ranging from ICU to acute care. Data collection was completed in December 2015 with 1200 respondents. Quantitative data analysis was descriptive and correlational in nature, with subgroup analysis according to level of education, years in practice, specialty of practice, role on treatment team, unit population and acuity level. Qualitative data analysis identified themes of participant concerns and was integrated with quantitative data.

Results: Data analysis revealed that self-perceived competency in EOL Care is affected significantly by educational preparation ($p<0.0001$), years in current practice ($p<0.0001$), acuity level of unit population ($p<0.0001$), role on treatment team $p<0.0001$ and physician specialty ($p<0.0002$). Qualitative analysis identified 7 major themes 1. *Decision-making* regarding code status, transition of care and honoring patient wishes; 2. *Communication* on various levels 3. *EOL Care* regarding symptom management and family support; 4. *Spiritual and Cultural Care* including spiritual distress and cultural sensitivity; 5. *Ethical concerns* including futility and family disagreements; 6. *Satisfaction of PC and EOL Care*; and 7. *Educational needs*

Lessons Learned: The results of this project will guide the development and recommendation of interventions to address documented gaps related to collaborative palliative and EOL care delivered to hospitalized patients. Interventions may include education of staff caring for patients with advanced illness about palliative and end-of-life care issues, improvement of end-of-life care planning for hospitalized patients, development of health care provider's abilities to initiate an earlier and more collaborative approach with the Palliative Care team regarding end-of-life care.

Future Applications and Next Steps: The UMHS is committed to developing collaborative multidisciplinary teams who competently address palliative and end-of-life care management of patients and families across the lifespan. This study provides baseline measurements for effectiveness comparison of future interventions and practice improvements, and may also provide direction to new research initiatives in the care of patients and their families who are facing life-limiting situations.

Interdisciplinary Co-teaching in a Clinical Skills Course: What Makes the Relationship Work?

Michelle Daniel and Emily Hogikyan

Background including purpose and significance of study: Interdisciplinary co-teaching has become an increasingly popular pedagogic model in clinical skills courses (CSCs). This educational paradigm warrants study for its potential to teach medical students how to integrate biologic and psychosocial perspectives to promote more holistic, patient centered care , while simultaneously modeling collaborative practice on healthcare teams. The purpose of this qualitative study was to explore interdisciplinary co-teaching between physician and social behavioral science (SBS) faculty in a clinical skills course (CSC) at a single institution, to gain an in depth understanding of the factors that promote and impede these relationships. Methods: Permission for the study was obtained from the Brown University Institutional Review Board (IRB). Twelve semi-structured interviews were conducted using purposive, maximum variation sampling. Interviews were audio recorded and transcribed verbatim. Independent coding was performed on a sample of interviews to ensure inter-rater agreement and consensus on themes was reached through discussion. Data was analyzed using NVivo software and a constant comparative method, grounded theory approach until thematic saturation was reached. Two focus groups were used for member checking and elaboration. Results: Respect, trust, open and honest communication, flexibility, knowledge base and experience, similar levels of investment (in the course, the co-teaching team, and the students), and similar small group facilitation styles were identified as important. A breakdown in any one of these elements could harm the relationship. Hierarchies and dominant “alpha” interaction styles were identified as particular impediments. Several factors that could have marked positive or negative effects on the relationship were identified that were not under the direct control of the co-teachers themselves. These included good pairings (by the administration), the small group composition (the students themselves), the physical environment, the course design, the curricular topics, administrative support (including faculty guides and faculty development), and (perceived fairness of) compensation. Conclusions: Many of these findings resonate with what has been described in the general education literature on co-teaching, but others appear to be unique to this interdisciplinary, medical education setting , , . This work has the potential to inform administrative practices and future faculty development in this and other CSCs using, or considering using, a co-teaching paradigm. Ideally, the factors identified may be used to improve pairings, and co-teaching practice in the classroom and in clinical environments. The findings may also be transferable to other healthcare settings involving interdisciplinary teams.

Using team-based interprofessional education to enhance student knowledge of healthcare professional roles

Gundy Sweet

Background:

A large-scale, semester-long interprofessional education (IPE) course involving 257 students from five health science schools was implemented in 2015. This study evaluated whether a pedagogy that involved collaborative, case-based decision making by interprofessional teams of student learners was effective for teaching the roles of healthcare professionals on the healthcare team.

Method:

Baseline knowledge of student perceptions and knowledge of each profession was assessed using a survey instrument developed by the faculty. Students indicated their level of familiarity with the coursework required for each discipline, the role that each discipline plays on the team, and their likelihood for future collaboration. A 10-question quiz assessed general knowledge of each profession. Throughout the semester interprofessional students teams solved complex patient cases that required collaboration across disciplines. The roles assessment was re-administered in the last week of class. Post-course assessments were compared to baseline scores to determine knowledge gains.

Results:

Learning of professional roles, as assessed by the 10-point quiz, showed significant improvement in post-course scores vs baseline scores (7.0 +1.6 vs 5.0 + 1.6; $p < 0.0001$). After the course, significantly more students reporting being familiar with understanding the role each discipline has on the team and the education and training required for each discipline ($p < 0.05$). Across disciplines students generally perceived an increased likelihood of future collaboration.

Lessons Learned:

Using a case-based pedagogy allowed students to teach each other about their respective disciplines, to learn about the roles each profession plays on the team, and to gain experience in representing the role of their profession.

Next Steps:

Over the next few years the course will be expanded to include more students from the five health-science professions. The lessons learned from implementing this large-scale IPE course are being applied as the university looks to expand its IPE offerings.

Interprofessional Education: Social Work and Medical Students Working Together

Daniel Fischer, Keli Klein, Susan Sefansky and Joseph House

Background:

Interprofessional Education (IPE) is critical to training future health care professionals in collaborative practice. IPE includes understanding roles and responsibilities, communication, and teamwork as three primary core competencies. Interprofessional experiences should involve students using the knowledge of their professional role and those of other professions to effectively assess and address the healthcare needs of patients and populations served, and learning and applying communication skills and relationship-building values that support a team approach in delivering effective patient/population centered care.

Actions, Methods or Intervention:

The University of Michigan Medical School has several standardized patient interactions as part of the training experiences for medical students. During the required fourth-year Emergency Medicine rotation students participate in a Breaking Bad News (BBN) standardized experience. In practice, rarely is breaking bad news a 1-on-1 activity, but rather involves multiple disciplines. A group of interprofessional educators modified an established scenario to include masters level social work students in the experience. The beginning of the student session includes a simulation of a patient death. Following completion of the "code" the social work student and medical student were given a few minutes to collaborate and then together met with a standardized patient playing the spouse/partner role, to deliver the news of the patient's death. Through this process students are able to put discipline-specific practice behaviors into action.

Results

Both student groups were evaluated using a communication skills checklist. Feedback on the training was also provided in discussion groups with the students and the standardized patients. Both student groups reported the training experience to be very realistic and helpful for them to gain a greater appreciation for each other's roles and the benefits of teamwork and communication. Comments from the standardized patients note the sessions appeared more realistic to them with the social work students involved. Prior to the sessions, medical students did not know what information social workers were able to provide to patients' families and were not familiar with the social work role in breaking bad news. Likewise, social work students were less familiar in their role in these situations.

Lessons Learned

Prior to social work being involved in a BBN SPI, it was important to educate them about their role and how they can be incorporated into the team. IPE experiences involving the use of simulations and standardized patients is an effective training model for the immersion and mastery of interprofessional core competencies. Having opportunities for the students to meet together prior to the experience and to debrief afterward was an important aspect of the IPE experience.

Future Applications and Next Steps

IPE simulation experiences are a useful and important aspect of training for health professionals. Developing scenarios to include other health sciences disciplines exposes students to the multidisciplinary approach and may further define their own roles. In this BBN, only about ¼ of medical students worked with social work students, involving other professions, i.e. nursing, may allow all students to participate in an IPE experience.

A Social Work Course for Dental Hygiene Students in Community-Based Outreach Rotations: Development, Implementation, and Lessons Learned

Adrienne Lapidos and Anne Gwozdek

Background: In providing patient care in community-based outreach rotations, students in the University of Michigan (U-M) Dental Hygiene Program have at times felt troubled by the psychosocial challenges, significant poverty, and high need for care among patients. Yet there was no course within the Dental Hygiene curriculum that was explicitly connected to “debriefing” the outreach experience.

Actions and Methods: To address this unmet need, the Dental Hygiene Program collaborated with the U-M School of Social Work in obtaining a grant from the U-M Center for Research on Learning and Teaching (CRLT) to develop a course entitled “Skills for Patient- and Family-Centered Care with Diverse Populations,” which was offered in Fall 2015 and will be offered again in Fall 2016. This course transformed the outreach requirement from a free-standing experience to a fully integrated part of the curriculum through two key mechanisms: (1) preparing students for outreach by delivering academic content on cultural competence, social determinants of health, and health equity; and (2) encouraging personal reflection about the outreach experience. Using a critical service learning framework (Mitchell, 2008), the course drew upon diverse disciplines in creating a curriculum, including Dentistry, Social Work, Psychology, and Sociology. This poster will describe course development, implementation, and lessons learned, and also features written work produced by students within the course.

Results: In conducting the pre-course needs assessment, one prominent recommendation was to work with students on maintaining a nonjudgmental stance when interacting with patients. While it was rare for students to make overtly judgmental remarks to patients, field instructors had noted that some students had difficulty hiding their shock and dismay when treating patients with severe oral deterioration or when attempting to correct extremely health-compromising behaviors. The course explored themes that transcend any one discipline, including self-reflection, cultural humility, and social justice, and focused on the social determinants of health, particularly the role of poverty as a “fundamental cause” of health inequality. In implementing the course, it became apparent that the intricacies of addressing and coping with patients’ health-compromising behaviors was a significant emotional issue for many students.

Lessons Learned: The course was designed to be both academic and experiential; a combination of learning the theoretical and empirical literature on healthcare equity, and a space to “debrief” critical incidents during outreach experiences. In attempting to do both, the course ultimately took a shallower approach to each than would have been possible if only one had been the focus.

Next Steps: Future course offerings will reflect this insight, placing less emphasis on academic content and more on critical incidents during outreach. Academic content on the social determinants of health will still be featured, but its purpose will be to highlight aspects of critical incidents on outreach rotations as opposed to facts and theories about community practice.

2 Years of an IPE/IPC Collaboration between Dentistry and Nursing

Mark Fitzgerald, Howard Hamerink, Wilhelm Piskorowski and Michelle Pardee

Purpose and Background:

Recent studies have shown that team-based interprofessional care of patients in hospital settings results in improved treatment outcomes and patient health. Challenges in team-based interprofessional care of patients outside of a hospital setting in settings such as common primary care clinics include finding effective ways to educate/train/change healthcare provider habits and measuring outcomes from such interactions. This study, a collaborative project between the Michigan Health Council, the University of Michigan School of Dentistry and the University of Michigan School of Nursing, evaluates the effectiveness of a dental-advanced practice nursing interprofessional education (IPE) experience on changing health care provider attitudes and patient treatment outcomes in a full service primary care health facility

Methods

A model for an IPE emersion experience that provides students a standardized IPE experience in an IPC environment was developed and implemented. It involved Dental and Nurse Practitioner (NP) students from the University of Michigan collaboratively providing care (IPC care) for patients in the dental clinic at a FQHC in Flint, MI. When Nurse Practitioner students were not present, Dental students provided traditional non-IPC care for patients. Dental and Nurse Practitioner (NP) students worked together during 2 to 4 weeks rotations in a patient-centered IPE/IPCP model in a facility serving an underserved population in the 200% poverty level or below to provide new patient intake screening, history taking, systems assessments and health care for patients in the dental clinic. Patient activation, quality of life, perception of treatment received and actual treatment outcomes were measured before and after treatment. Student team performance was measured using an Interprofessional Collaborator Assessment Rubric (IPCAR) and student perception of the program was measured before and after clinic rotation assignment using a Participant Perception Indicator (PPI) survey modeled after the evaluation points in the IPCAR.

Results:

22 Dental and 20 Nurse Practitioner students provided IPC patient care for over 350 patients using the IPC model. Pre and post assessments for provider perception of IPC, patient perception of care received, patient activation and patient QOL were measured without impeding patient care. Data representing outcomes over the two years will be reported. The IPE/IPC model that was developed to allow students to interact and provide patient care in a practice based IPE/IPC setting was validated. Preceptors involved in the model agreed that the model is universally adaptable to provider type and practice setting. Patients were highly receptive to the care provided

Conclusions:

An IPE/IPC model that was developed to allow students to interact and provide patient care in a practice based IPE/IPC setting was implemented and validated as being a feasible model that is accepted by patients and care facilities alike. This model is universally adaptable to provider type and practice setting.

Future Applications and Next Steps:

Plans are in progress to expand this model to other health care centers and involving students from dentistry, medicine, social work and occupational therapy. The goal is to have all dental students experience at least one emersion experience in their final year of school by 2018.

The Medical Device Sandbox: A Creative Learning Experience for BME Students and Medical Learners

Jennifer Lee, John Gosbee, Rachael Schmedlen, Jan Stegemann and Stephanie Kusano

Background: Currently, interprofessional learning experiences between medical learners and biomedical engineering (BME) students are informal and ad hoc. Medical students and residents occasionally seek engineering expertise about device safety and design. BME students occasionally seek medical expertise for design questions and feedback. All learners seek a better blend of technical and clinical expertise in a real-world context.

Actions, Methods, or Intervention: The Medical Device Sandbox is a learning initiative that provides a structured environment for bringing medical and BME learners together and helping them conceptualize the workings and possible problems of modern medical devices. During sessions facilitated through expert instruction, interprofessional teams of BME students and medical learners are presented with realistic patient safety scenarios involving the use of medical devices, asked to identify use problems, and brainstorm solutions with sketches and physical prototypes.

At the end of this course, all learners will:

1. Report an enhanced understanding of the clinical perspective and more positive attitudes toward interprofessional teams.
2. Better identify possible use errors and design flaws that can be corrected to improve device safety and functionality.
3. Effectively design low-fidelity prototype devices that address use errors and fit into current hospital/ clinic settings.
4. Demonstrate enhanced creative process and ability to innovate solutions to medical device design.

Results: A qualitative approach with retrospective surveys involving 29 BME students and 20 medical learners (16 students, 4 residents) was used to assess the MDS experience.

Survey results are as follows:

1. Percentage of participants that agreed that they better understand patient safety issues involved in the design of medical devices: 100% medical learners, 87% BME students.
2. Percentage of participants that agreed that their ability to recognize user errors in the use of medical devices increased: 93% medical learners, 87% BME students.
3. Percentage of participants that now see the value of the contributions from the opposite discipline can make on patient safety and medical device design projects: 92% medical learners, 100% BME students.
4. Percentage of students that now see themselves preferring to work in interdisciplinary settings: 86% medical learners, 81% BME students.
5. 85% of medical learner participants agreed that engineers contributed unique ideas to redesigns that they had not considered.
6. 77% of medical learner participants agreed that their preconceptions of engineers had changed.

Lessons Learned: Preliminary Data on MDS experiences indicate that all learners view MDS sessions as positive learning experiences with a unique opportunity to collaborate on interdisciplinary teams on medical device design challenges. Results also showed that MDS changed learners' perceptions on the value of human factors when working on design and increased their awareness of design issues challenges. MDS especially shaped medical learners' understanding of engineers.

Future Applications and Next Steps: This pilot study will lead into a larger study that will more rigorously assess student's learning outcomes. Next steps include post-session surveys, evaluations of students' creative process using the AAC&U VALUE rubric on creativity, and a comparative analysis of students' interdisciplinary attitudes by comparing those who participate in MDS versus to those who have not.

Successful Implementation of Dental Preventive Strategies in Medical Clinics via Inter-Professional Education and Training

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Background

Early Childhood Caries (ECC) is a preventable disease common among children from birth to 3-years old. The Michigan Caries Prevention Program (MCPP) is a three-year grant-funded effort to reduce this childhood dental disease through integrative strategies that promote dental health in the medical health home. Those strategies include: (i) oral health risk assessment; (ii) fluoride varnish application; (iii) patient education; and (iv) dental referral. This pilot case study involved an inter-professional team consisting of 7 individuals: 2 oral health experts (dentist and hygienist), 2 medical clinic participants (physician and admin support), 1 sociologist (qualitative oversight), and 2 public health administrators (training and quantitative analysis). The team will collaboratively educate 1,500 medical professionals in Michigan over the course of the program. The purpose of this study is to determine factors that might influence long-term program sustainability of implementing new dentally-associated procedures in the medical clinic.

Methods

We provided oral-health related training sessions for 935 medical providers, residents, and their staff statewide, to date. We also worked closely with a University of Michigan Health System (UMHS) site, East Ann Arbor Pediatrics, and conducted semi-weekly focus groups with medical residents, providers, and staff members to gather qualitative data about barriers that hinder successful implementation. We coded the field notes into emerging themes and combined the qualitative data with quantitative key performance indicators (KPI), including the number of fluoride varnish applications and oral health assessments.

Results

During this pilot study period, we trained 240 providers associated with the University of Michigan (179 physicians, 61 residents). At our East Ann Arbor site, we trained 21. At that site, we examined 982 total patient encounters, including 181 involving medical residents over 5 months. Medical providers and residents documented an oral health risk assessment for 86% of eligible patients seen and applied fluoride varnish to 56% of all children at eligible visits.

Lessons Learned

We achieved successfully high rates of oral health intervention carried out by medical providers who were trained inter-professionally by a dental, public health, and social sciences team. Success in reaching the goals of this inter-professional training program depended on presence and persistence of cultural encouragement and procedural skills, and the collaboration of relevant experts who contributed a broad set of identifiable skills. With these supports in place even a procedure outside of the normal scope of care, such as the application of fluoride varnish to prevent dental caries, was smoothly integrated into the medical practice.

Future Applications and Next Steps

Ongoing inter-professional education and inter-professional care collaborations can help improve the oral health of children when dental preventative strategies are successfully implemented within medical settings. We argue that regularly scheduled team meetings between medical clinicians and other professionals help individuals prioritize new procedures. Inter-professional sites like the University of Michigan School of Dentistry Community Based Dental Education clinics are promising models for future projects that combine medical and dental training."

Developing a Model for Interprofessional Care and Education at the UM Student-Run Free Clinic

Lauren Agoubi, Jacob Cedarbaum and Maya Faison

Background:

The University of Michigan Student-Run Free Clinic (UMSRFC) is a free clinic in Pinckney, Michigan that provides primary care services to around 500 uninsured adults each year. In its 5 year existence, the UMSRFC has been operated entirely by medical students. Over this period, data has revealed major gaps between the services patients need and what the UMSRFC provides. In one survey (N=194), 28% of patients had not received dental care in over 5 years. In another survey (N=166), 15% reported unmet needs for mental health services.

To address these needs, the UMSRFC is developing a series of interprofessional partnerships with other schools at the University of Michigan. While other medical school free clinics, including those at the University of Minnesota and UCSD, have already adopted models based on interprofessional care, many of these programs are run by faculty who delegate tasks to students. The UMSRFC, in contrast, is pursuing a novel approach to interprofessional care that is student-designed, student-led, and student-run.

Actions/Methods:

In the fall, the UMSRFC began utilizing a multi-pronged approach to interprofessional education (IPE) that incorporates students, faculty, and IPE leadership. Our approach has stemmed from networking with health professions schools across the university. We participated in Institute for Healthcare Improvement (IHI) meetings and shared ideas with students and faculty, including formal presentations to the IPE Executive Committee and the first year dental student class. Through these connections, we have formed student and faculty-driven initiatives at the public health, nursing, dental, and pharmacy schools.

Results:

The UMSRFC has made tangible progress toward the goal of an integrated clinic. We have established formal partnerships with the IPE Executive Committee and the faculty of the Nurse Practitioner program. All of our student collaborators have created groups at their respective schools and recruited faculty advisors. These efforts have allowed us to begin creating sustainable partnerships to increase the clinic's capacity. Among other successes, the UMSRFC and dental students were recently awarded a \$15,600 Bicentennial grant that will allow the clinic to offer dental education and screenings.

Lessons:

Throughout the establishment of partnerships across the University of Michigan, the UMSRFC has observed distinct differences in pace, availability, and support, depending on the approach taken. There are distinct benefits and challenges associated with student-led versus faculty-led initiatives. Student-led partnerships allow the UMSRFC to maintain clear decision-making autonomy. However, faculty-led projects have taken root much more quickly. Reflecting critically on these differences is crucial to the success of IPE initiatives in the future.

Future Applications/Next Steps:

In the immediate future, the UMSRFC will focus on incorporating current partners from the dental, pharmacy, public health, and nursing schools into the clinic structure in sustainable and meaningful ways. It is also our goal to build connections with new schools that can extend needed services to our patients, such as counseling and physical therapy. Once programs have been implemented, another focus will be evaluating their efficacy and impact in order to determine the trajectory of ongoing and future projects.

Interprofessional Curricula and Program Selection Factors for Doctor of Physical Therapy Students

Laura Smith, Christin Curtis and Amy Yorke

Background:

Interprofessional education (IPE) is an opportunity for multiple health care disciplines, including physical therapy, to collaborate and improve clinical outcomes for their patients (WHO). The American Physical Therapy Association (APTA) adopted the Interprofessional Education Collaborative (IPEC) IPE core competencies (APTA Endorsement of IPE) in 2014 and the Commission in Accreditation in Physical Therapy Education (CAPTE) will have a requirement for interprofessional education (IPE) within accredited physical therapy education programs beginning in 2018. These standards have been put into place in order to ensure that physical therapy students, as well as other health professional students, will increase their mutual knowledge of and develop respectful relationships with each other. With this in mind, the purpose of this study was to explore if IPE curriculum was an influencing factor in students' decisions in selecting an entry-level DPT education program.

Methods: A questionnaire was completed by 218 entry-level doctorate of physical therapy students enrolled in six different physical therapy programs, half with IPE and half with traditional curricula. One-way ANOVA and correlation analyses were conducted to determine relationships and differences in student selection of an educational program.

Results: Students identified that location, acceptance into the program and quality/reputation of the program were found to be the most prevalent influencing factors, followed by undergraduate attendance, helping others, and cost. The influence of curriculum structure or IPE integration was not found to be significant factors when PT students in this study were choosing what program to attend. This study also discovered a lack of relationship between the type of program that the participant was enrolled (either IPE or traditional curricula) and the reason that they chose the school, suggesting that students may be unaware of IPE and/or the benefits of an IPE integrated education.

Lessons Learned: The lack of relationship between the type of PT program that the participant was enrolled (IPE or traditional) and the reason that they chose the school suggests that students may be unaware of IPE. It is possible that if more students were informed of IPE and the potential benefits, both as a student and for future patients, more potential students would consider curriculum type when choosing a PT program. The data supports the recommendation of programs to promote IPE to prospective students; bringing awareness to IPE and the advantage of this type of curricula during the application stages.

Future Application & Next Steps: This information may be valuable as health professional programs work toward the goal of the WHO (WHO) for promoting IPE and collaborative practices in order to globally improve patient satisfaction and outcomes. Subsequently, beginning in 2018 CAPTE will incorporate IPE into the required curriculum for all PT education programs in the United States (CAPTE Standards). This event along with the findings of this study are noteworthy and may be useful to physical therapy and health profession education programs in their endeavors to raise awareness of their IPE curricula and the explore potential benefits as a marketing and recruitment strategy.

Student Special Interest Group: An Opportunity for Interprofessional Collaboration

Laura Smith, Dan Crusoe, Alan Fredendall, Adam Gilbertson, Rachel Selina and Jamie Creps

Background: A Student Special Interest Group is a way to foster the professional development of health professions students and residents through a collaborative student-driven, faculty supported, community of practice. Special Interest Groups are a way to provide students and residents opportunities to advance clinical reasoning and specific practice skills rooted in evidence based practice. The purpose of this research project was to explore student and faculty perceptions of an Orthopedic Physical Therapy Student Special Interest Group in an entry level doctoral program.

Methods: An e-mail invitation was sent to the students and faculty of a physical therapy department. A voluntary and anonymous electronic survey was completed by 104 doctor of physical therapy students and 13 faculty.

Results: Statistical analysis indicated that the majority (95%) of students who attend found the experience valuable and that 70% reported increased confidence in decision making. Students and faculty identified that other health professions such may add value to this learning experience. Students and faculty with a current professional membership had higher participation in the special interest group than those without.

Lessons Learned: Discipline specific student interest groups should consider opportunities for interprofessional collaboration. An Orthopedic Physical Therapy Special Interest Group can be an opportunity for learning in an interprofessional and collaborative practice environment despite the specific content focus of musculoskeletal and manual physical therapy practice.

Future Applications and Next Steps: The results of this study brings awareness to students and faculty about the value of expanding the audience of the group meetings to what is currently seen as an inclusive group. The plan for next year is to offer some interprofessional meetings and explore if the perceived value of the special interest group meeting is heightened because of the collaborative environment.

Using Standardized Patient Simulation to Promote Interprofessional Education Across Multiple Healthcare Curriculums

Amy Yorke, Megan Keiser, Leslie Smith and Carman Turkelson

Background: The recommendation to focus on improving interprofessional teamwork within the context of a collaborative patient-centered care environment is clear; however the best way to facilitate the development of these skills remains largely unknown. Future healthcare professionals continue to be predominantly trained in professional silos within their separate disciplines, potentially undermining the concept of a collaborative team. As a result, healthcare professionals often lack systematic interprofessional training on the critical, but non-technical knowledge, skills, and attitudes essential for effective teamwork. The purpose of this pilot project was to explore the effect of an interprofessional simulated learning experience with students from three healthcare disciplines.

Methods: A prospective pre/post design was used to examine the effectiveness of a multifaceted strategy including didactic and standardized patient simulation sessions on student perceptions of interprofessional teamwork. Between January 2016 and April 2016 students from undergraduate nursing (n=39), physical therapy (n=57), and graduate nursing programs (n=6) participated in evidence based web-based, didactic and standardized patient simulation sessions focusing on critical teamwork elements. The Readiness for Interprofessional Learning Scale (RIPLS) and Interdisciplinary Education Perception Scale (IEPS) were completed pre and post simulation. The Student Satisfaction and Self-Confidence in Learning (SSS-CL) was completed immediately post-simulation.

Results: Analysis currently in process looking at pre and post scale differences in the RIPLS and IEPS in all three groups of health care students as well as SSS-CL. Complete results are pending due to data currently being analyzed.

Lessons Learned: The utilization of a multifaceted educational approach including didactic and standardized patient simulation experiences allowed students to gain valuable experiential knowledge and practice with other interprofessional team members gaining essential teamwork behaviors required for safe high-quality clinical practice. Basic communication strategies and language are different between disciplines. Considerations should be made to have at least three different possible variations of the case in order to assist in maintaining the fidelity of the simulation when completed over a several day period. Undergraduate and graduate nursing students demonstrated changes in their performance when given the opportunity to repeat the simulation.

Future Applications and Next Steps: Continue with interprofessional education thoughtful integrated throughout the curriculum in undergraduate and graduate nursing and physical therapy. Design pre-simulation activities specific to physical therapy and nursing that would allow intentional practice to communicate about common patient scenarios involving both disciplines.

U-M School of Public Health's "Innovation in Action: Solutions to Real-World Challenges"

Ann Verhey-Henke, Erin Moore and Julie Cruz

Health Professions Education Day – Abstract

U-M School of Public Health's "Innovation in Action: Solutions to Real-World Challenges"

Ann Verhey-Henke, Managing Director, Office of Innovation & Social Entrepreneurship

Background: Innovation in Action: Solutions to Real-World Challenges (IIA) is a five-month co-curricular experience, open to all U-M students, graduate and undergraduate alike. The goal of IIA is to create a safe environment for students to take risks and move beyond the classroom through an immersive, experiential, cross-disciplinary team-based program that equips them with an innovator's toolkit and an ecosystem that nurtures the skills necessary to be life-long innovators. Students leave with a more refined interprofessional skill set as well as a more holistic understanding of public health applications and its relevance to the health professions fields.

Actions, Methods, or Intervention: The School of Public Health's Innovation and Social Entrepreneurship program runs IIA in partnership with the Center for Entrepreneurship (ENG), the School of Information, the Entrepreneurial Law Clinic (LAW), Zell Lurie Institute (ROSS), optiMize (LSA) and other U-M student organizations. Together we share our expertise with student teams through a skill-building module framework to: identify and understand the problem, build effective teams, design a creative solution, measure impact, etc. From creating an app that brings patients living with chronic illness together to developing a prototype for a better breast pump, student teams have demonstrated the potential of innovative programs like IIA to transform passion for social change into enterprises that can have a health-related impact outside University walls.

Results: In three years, IIA has engaged over 270 students across 18 of the 19 U-M schools and colleges, with 56 cross-disciplinary teams completing the five-month process (each team has representation from at least 2 units on campus). Preliminary quantitative analysis of post-participation survey data indicates an array of positive outcomes, including self-reported increases in innovation knowledge, motivation and identity. Participants cited the acquisition of real-world skillsets and professional health development as a key result of the program.

Lessons Learned: Both empirical and qualitative assessments of the program demonstrate that participants obtain the expanded knowledge and inter-disciplinary experience needed to take innovative solutions beyond the classroom. From one participant: "I now have a much more robust understanding of how to design, develop, and implement an innovation in the field of public health. I feel much more confident about thinking of public health challenges within the context of innovative interventions."

Future Applications and Next Steps: IIA's success has generated interest across campus and outside U-M, encouraging our team to consider: what is our larger vision for the program and how can we better serve all U-M students? With these questions in mind, and the support of a 2015 Quick Wins / Discovery Grant from the University of Michigan Third Century Initiative, we plan to continue expand in two key ways:

1. Expand new competition themes within Innovation in Action: Solutions to X Challenge, where X is a topic that students care passionately about across disciplinary boundaries. We successfully completed a pilot with "Solutions to Education Challenges" in the 2015-2016 academic year, and hope to continue to expand in the upcoming years to other interprofessional fields
2. Continue to build targeted curricular supplements to the program, like our "Entrepreneurship in Public Health" course piloted this winter, allowing students to bookend their IIA experience with more expertise for course credit.

OpTrust – A Minimally Invasive Observation Tool for Assessing Autonomy and Entrustment in the Operating Room

Christopher P. Magas, Gurjit Sandhu, Vahagn C. Nikolian, Danielle C. Horne, R. Brent Stansfield and Rebecca M. Minter

Background: The attainment of operative autonomy for graduating residents has been jeopardized by the shifting landscape of the surgical training environment. As such, faculty and resident development tools must be established to effectively train surgeons for the current context. To address these concerns, a new model for assessment of teaching and learning in surgical residency programs must be anchored on progression through milestones, as well as entrustment. We propose a novel faculty and resident development tool, OpTrust, to assess faculty and resident intraoperative behaviors that may support or inhibit progressive entrustability.

Actions, Methods, or Intervention: Following rater-training, observers directly watched operations. Each case was observed by a pair of raters, one surgeon and one non-MD, creating as many different rater combinations as possible. 34 cases were assessed using OpTrust and raters did not discuss cases with one another. OpTrust separately assesses faculty and resident behaviors in the operating room along 5 domains using a 4-point scale (low to full entrustability). Intra-Class Correlation (ICC) estimated Inter-Rater Reliability (IRR). Cronbach's alpha estimated the appropriateness of using the mean of the 5 OpTrust domains as a single measure of the construct of entrustability.

Results: IRR for all domains demonstrated an ICC of > 0.80 . Collapsed faculty and resident domains also demonstrated a Cronbach's alpha of 0.90 and 0.83 respectively, indicating that the domains assessed in OpTrust can be used as a single measure of the construct of entrustability in the operating room.

Lessons Learned: OpTrust demonstrates excellent IRR between surgeon and non-MD raters. The unidimensionality of the scale established here allows for an innovative approach to examining the interaction between faculty and resident behaviors in the operating room, and establishes OpTrust as a first-in-class faculty development tool for achieving resident progression to autonomy with appropriate supervision. OpTrust focuses on behaviors of both individuals in the faculty-resident dyad of entrustment interactions within the operating room. Interventions can then be directed at particular domains for the faculty member, resident, or both. This unique approach to assessing teacher-learner dyads by examining both sets of behaviors has the potential for development of more effective interventions.

Future Applications and Next Steps: Feasibility of this initial study will need to be explored in order to support expansion and to other institutions. This will help investigate the replicability of results. Findings of this study have the potential to significantly enhance how faculty surgeons teach and assess within the operating room, impact the training paradigm for all procedural specialties within Medicine, and provide an educational model that could readily be adapted by non-procedural fields.

A Milestone Based Medical Student Performance Evaluation for Pediatrics, OBGYN, Emergency Medicine and Surgery: an Educational Handover from UME to GME

Helen Morgan, David Hughes, Jocelyn Schiller, Lauren Wancata, Paula Ross, Cemal Sozener and Sally Santen

Background:

Communication between Undergraduate Medical Education (UME) and Graduate Medical Education (GME) regarding learner performance has been a national problem. Furthermore, documentation of competence has been poor. Our current curricular innovation is an opportunity to improve the assessment of learners as well as the continuum between UME and GME. The Accreditation Council for Graduate Medical Education (ACGME) Milestones Project accelerated the alignment of UME and GME competencies with the definition of level one milestones as the level expected of an incoming intern. These milestones are defined within the six ACGME competencies of Patient Care, Medical Knowledge, Interpersonal Skills and Communication, Systems Based Practice, and Practice Based Learning and Improvement. At the University of Michigan Medical School, residency preparation courses in the fields of pediatrics, obstetrics and gynecology and surgery are currently offered in the spring of their fourth year.

Actions, Methods, or Intervention:

The specialty specific ACGME level one milestones for pediatrics, obstetrics and gynecology, and surgery were mapped to current medical school assessment data as well as the high stakes summative Clinical Competency Assessment (CCA). Specialty specific Milestone Based Medical Student Performance Evaluations (mMSPEs) were created for students enrolled in these courses. Students provided written consent for the mMSPEs to be sent to their future Program Directors (PDs) at the onset of each of these courses. IRB exemption was obtained.

Results

Assessment data required to complete mMSPEs for the specialty specific ACGME level one milestones markedly varied. All specialties' competency assessments utilized data from the CCA and the residency preparation courses. In addition, the surgery milestone mapping utilized data from required third and fourth year surgical electives. Obstetrics and gynecology and pediatrics milestone mapping utilized fourth year patient care elective data less than surgery. For all of the specialties, there were robust assessments available for Patient Care and Medical Knowledge Competencies. There were more limited assessment data available for the Interpersonal Skills and Communication, Systems Based Practice and Practice Based Learning and Improvement competencies. Individual mMSPEs have been created for the 20 students entering general surgery and surgical specialties, 8 students entering pediatrics and 11 students entering obstetrics and gynecology.

Lessons Learned

It was feasible to create individual mMSPE that reported individual learner performance on specialty specific level one milestones. More high quality assessments are needed especially for the Interpersonal Skills and Communication, Systems Based Practice and Practice Based Learning and Improvement competencies.

Future Applications and Next Steps

Our pilot experience demonstrated that mMSPEs can feed forward important competency based information from UME to GME. Future applications will involve expanding the types of specialties involved, as well as the types of assessments utilized. An important goal of the University of Michigan Medical School Curricular transformation is to ensure that its students thrive and succeed during their residency training. This innovative mapping of current medical school assessments for the creation of the educational handover is a first step to help ensure this goal.

Challenges training left-handed surgeons: Perspectives from expert surgeons

Maia Anderson, Erica Carballo, David Hughes and Rishindra Reddy

BACKGROUND: Studies suggest that left-handed (LH) surgical trainees have less technical ability and are consistently rated lower by attendings than their right-handed (RH) counterparts. However, there is a substantial lack of data available on how to train LH surgeons. We elicited the perspectives of LH trainees and their teachers in order to identify the challenges faced, modifications made, and opportunities for further intervention in teaching LH surgical trainees.

METHODS: Participants were recruited by email and asked to fill out an anonymous online survey about challenges teaching and learning surgical technique based on left-hand dominance, and adaptations to operating procedure and instrument handling for LH surgical trainees. Respondents were grouped by writing hand dominance and current level of training into RH attendings, LH attendings, and LH trainees (medical students, interns, residents, and fellows). Response frequency of RH attendings and LH attendings was compared by Fisher's exact test with a significance level of $p = 0.05$.

RESULTS: We received 130 responses from 22 institutions, including 65 RH attendings, 26 LH attendings, and 39 LH trainees. When compared to LH attendings, RH attendings reported significantly more difficulty (46% vs 16%) and less comfort teaching LH trainees (28% vs 4%). Very few attendings (15% of RH and 4% of LH) reported that LH trainees have less technical ability than RH trainees. Among RH attendings, increased difficulty correlated with less comfort teaching LH trainees ($p < 0.01$), but not lack of technical ability ($p = 0.125$). In text commentary, RH attendings identified specific difficulties teaching LH trainees ranging from set up to closure including disorientation while assisting and teaching procedural steps, and physical limitations due to LH trainees operating in an environment optimized for RH surgeons. Despite these challenges, the only modification made by a small majority of respondents (~50%) was switching side of the table. Less than 15% of LH trainees or their teachers (both RH and LH attendings) reported making changes to preparation/positioning of patients, providing LH instruments, or changing order of steps in open or laparoscopic surgery to facilitate left-hand dominance.

LESSONS LEARNED: There is a considerable lack of understanding by both LH trainees and their teachers about how to and what to modify to accommodate for left-handedness in the operating room. As a result, there are significant barriers in teaching LH surgical trainees with RH attendings, the majority of faculty surgeons, reporting significantly more difficulty teaching LH surgical trainees. In spite of this, few operative modifications for LH trainees were reported by LH learners or their teachers, highlighting the substantial gap between the needs of LH surgical trainees and the resources provided in surgical residency.

FUTURE APPLICATIONS AND NEXT STEPS: More resources are needed to better inform both LH trainees and their teachers. Further study on potential interventions and implementation of LH specific surgical training is warranted.

The Ultrasound Inequality Conundrum: Creating an objective structured clinical examination to address variability in emergency medicine resident ultrasound competency

Robert Huang, Ross Kessler, Melissa Skaugset, Nik Theyyuni, Sally Santen and Patricia Mullan

Background

Clinical Ultrasound has been identified as a patient care milestone for emergency medicine (EM) residents. The core content of clinical ultrasound has been identified by the American College of Emergency Physicians, but there is no objective examination in place for residencies to use to assure their graduates are competent to perform and interpret ultrasound in the unsupervised clinical environment. The goal of this study was to pilot the formation of an OSCE for use in EM residencies to evaluate if residents have gained sufficient experience to perform ultrasound independently.

Methods

Three advanced ultrasound practitioners were asked to form an expert panel to address what content they believed represented a minimum standard for graduating EM residents. After discussion and consensus-forming, an objective structured clinical exam (OSCE) was created to test both image acquisition and interpretation in seven different modalities (E-FAST, Aorta, Cardiac, DVT, Biliary, Renal, and Thoracic). The ultrasound faculty then made subjective assessments of 14 PGY-3 EM residents before administering the OSCE to each of them. Residents received a failing score if they failed to obtain a required image of sufficient quality or missed more than two critical knowledge questions pertaining to anatomy and pathology. A marginal passing score was assigned to a resident who ran out of time to finish a station. The data was also compared to the number of ultrasound examinations logged by each resident.

Results

Of the 14 residents, 7 (50%) received a failing score on at least one ultrasound modality; in total, twelve different modality failures occurred, with each participant receiving between 0 and 3 modality failures. Of those 14 residents, 6 received a pretest faculty assessment of "above average," 4 received an assessment of "average" and 4 received an assessment of "below average." Of the participants who received only scores of pass/marginal pass, 6/7 (85%) were identified as above average on faculty pre-assessment. There were no failures within the "above average" pre-assessment group. Of the 4 residents who received a below average faculty rating, 3 failed a single modality, while 1 failed two. Of the four residents rated as average, one received all passing scores, two failed two modalities, and one failed three. The number of US scans logged by the participants ranged from 31 to 748. While the four participants with the most scans logged before the OSCE all received passing scores, there was poor correlation between OSCE success and scans logged amongst the other participants.

Lessons Learned

In this pilot, the OSCE compared favorably to subjective US faculty evaluation of above average residents, with all residents evaluated as above average receiving passing scores. There was increased variability of success amongst residents rated average or below. There was some correlation between OSCE performance and number of clinical scans logged, but only amongst those with the most scans; the numbers of scans performed were otherwise a poor performance predictor.

Future Applications/Next Steps

Further work is necessary to find correlation in performance of the described OSCE to level of training and previous ultrasound experience. This OSCE will be taken to a multi-institutional group of experts for further development of content validity and testing.

An Evaluation of Measuring Mid-Clerkship Feedback in the Third-Year Surgery Clerkship

Christine Wu, Edward Carey, Ed Hur, Steven Hasday, Natalja Rosculet, Sara Weir, Mike Kemp, Susan Ryszawa, David Hughes, Rishindra Reddy and Gurjit Sandhu

Background

Feedback is critical to clinical medical education, and monitoring mid-clerkship feedback has become an educational metric for the Liaison Committee on Medical Education (LCME). Student-reported end-of-clerkship questionnaires (ECQs) are commonly utilized by school administration to measure feedback received. By this measure, the surgery clerkship has consistently trailed the other clerkships. The purpose of this study is to compare ECQ-reported rates of observation and feedback to rates generated from Department of Surgery internal metrics—direct-observations cards (DOCs) for history taking and physical exams, and forms from mid-clerkship meetings—and to understand the reason for any discrepancies.

Actions, Methods, or Intervention

Student-reported rates of observation and feedback from ECQs were compared to internal metrics for each two-month academic period from 2012-14 (12 periods total; n=309 students) using Fisher's exact test. A separate cohort of students (2014-15; n=73) were administered a survey regarding the feedback they received during the surgery clerkship. This included a narrative component speculating the discrepancies between ECQs and internal metrics. Responses were thematically coded.

Results

Forms documenting mid-clerkship meetings demonstrated higher rates of mid-clerkship-feedback than ECQs (95.43 % vs 83.57%, $p < 0.05$). DOCs also showed higher rates of observed history-taking (97.62% vs 84.87%, $p < 0.05$) and physical exams (99.67% vs 79.71%, $p < 0.05$) than ECQs. Furthermore, 27/73 (37%) of survey respondents included narrative explanations that most commonly attributed discrepancies to feedback being too superficial or non-specific (n=6), too brief (n=4), or that came from faculty who students had limited interaction with (n=4), thus making feedback not memorable.

Lessons Learned

Our results demonstrate that directly measured rates of feedback reflect higher rates of feedback provided than what is reported in end-of-clerkship questionnaires. Progress has been made in the surgical clerkship; yet, it continually reports lower feedback rates than other clerkships. This may be indicative of the unique environment of the surgical clerkship, and thus, the manner in which feedback is given, coupled with poor feedback quality, make it difficult for students to recognize and report instances of constructive feedback.

Future Applications and Next Steps

Utilizing more-timely and/or multiple methods to assess our feedback system may be more practical for the surgical clerkship. Furthermore, by providing instruction to residents and faculty on delivering more effective feedback focused on specificity and clarity, in addition to educating students on feedback interpretation, the quality of feedback can be enhanced so that both faculty and students become more engaged in our feedback system.

Teaching Effectiveness Differs by Type of Trainee: Variations in Faculty Rankings Between Surgery Residents and Medical Students

Gurjit Sandhu, Adina Robinson, Christopher Magas, Joel Purkiss and Rishindra Reddy

Background/Purpose: Educators who teach medical students and residents may require different teaching methods to scaffold and advance the abilities of learners at disparate levels, notably by surgeons who must emphasize technical skills and patient safety in the high stress operative environment. How faculty teach across the learning continuum within this acute educational context and what is valued by the learners is not well understood. The aim of this study was to better understand how teaching is valued by different levels of learners – from medical students to residents – and to assess whether particular methods are needed for each group.

Methods: Teaching evaluations of surgical faculty completed by students and residents were collected from 2011-2014. Using a mixed-methods approach, evaluations were analyzed within each group to identify predictors of overall teaching competence. Educators were ranked within the medical student (MS) and resident (R) groups by overall evaluation. The top quartile and bottom quartile were compared to their ranking within the resident evaluations to identify outliers. Comments from resident and student teaching evaluations were associated with the outliers. Content analysis was used to identify themes to discern differences in ranking.

Results: 84 faculty were rated by both medical students and faculty over 3 years. Questions pertaining to instructor (i) ability to provide feedback, (ii) engagement of students in learning and (iii) availability for teaching were factors that correlated with overall ranking by students. There were no specific areas within resident evaluations due to the lack of variation resident responses to different questions. . The top quartile of educators in the MS group were not ranked highly by the residents, but individually were spread out among the resident rankings, with some ranked in the bottom quartile by the residents. Similarly, faculty who were rated in the top quartile by the residents were ranked variably by the MS, with some ranked at the bottom. Themes (Table) that emerged among faculty highly ranked by residents and lowly by MS were opportunities for optimum supervision and autonomy in the operating room and clear explanations of intra-operative decision making (R), and intimidation and lack of preoperative and postoperative teaching (MS). Themes for faculty that were highly ranked by MS and low by R, were approachability and compassion (MS) and insufficient feedback in the operating room and lack of trust in residents (R).

Lessons Learned: Residents and students rated faculty using different criteria, with residents more focused on operative teaching skills, and students focused on approachability. Using one group to defined optimal teachers or teaching methods is clearly wrong, as the learners have different values.

Future Applications: Faculty development for surgical-educators that includes feedback from resident and medical student evaluations has the potential to provide support improved engagement of different learners. We feel that documentation of teaching effectiveness for promotion committees must be sought from multiple groups of learners, as we have shown that there can be significant discrepancies.

Planning the Medical Education Student Data Warehouse: Foundation of the Learner Portfolio

Susan Hollar, Fusen Li and Johmarx Patton

Background

The Learner Portfolio tracks student learning outcomes longitudinally over a student's academic career. Among the contents are formative and summative assessments, qualitative and quantitative feedback, and student-generated evidence. Students and faculty use outcomes data from the Learner Portfolio to identify areas of strength and opportunities for improvement. Faculty and staff use outcomes data to measure the efficacy of course content and pedagogical techniques. The first iteration of the Learner Portfolio includes mechanisms for student reflection and discussion, storage of student artifacts and the Outcomes Dashboard, which tracks individual student learning outcomes from multiple sources into a single interface.

As part of the development process, we interviewed faculty and staff regarding student-associated data needs. Through these interviews, interactions with students, and detailed analysis, it was determined that student-associated data is stored in multiple cloud-based, university supported, and/or Medical School Information Services (MSIS) -developed systems. Data structure is inconsistent, which results in interoperability, accessibility and portability problems. To remedy this situation, we are developing a Medical Education Data Warehouse (MEDW). The MEDW will provide the foundation and building blocks for a more integrated, data-rich, easy-to-use, accessible Learner Portfolio.

Actions, Methods, or Intervention

We are currently in the planning phase for the MEDW and implementation will begin in July 2016. Planning is the key to a successful data warehouse implementation. In addition to requirements gathering and conceptual data modeling, we are developing a project governance structure and RACI models to identify roles and responsibilities. We are also creating a bus matrix, a data warehouse planning tool and model.

Lessons Learned

Data warehouse planning requires data management expertise. We are collaborating with staff from MSIS Data Management Services at all phases during the planning process, and will continue throughout development. It is a time-intensive process and significant dedicated resources are necessary. Engaging with stakeholders to understand needs is integral to the planning process.

Future Applications and Next Steps

We will begin iterations of MEDW in July. This work will include a logical model, prototyping, and developing ETLs (Extract, Transform, and Load). With each iteration, we will assess the usefulness of the MEDW with stakeholders and prioritize the upcoming work. We will also work closely with stakeholders to identify data delivery methods as we are completing different data slices.

The Introduction of the Concept of Startle Response as a Component of a Dental Adverse Event

H Mark Pinsky, Amanda Beck-Slumka, Irene Cho, Sasha Gay-Haynes, Jae Han, Gabriel Le Gros, Philip Yoong, Deborah Rooney and Domenica Sweier

Background

Human factors are well-recognized components of an error chain leading to adverse events. Recently, there has been growing interest in the “startle response” defined in the aviation industry as “a psychological entity that also possesses some biological implications such as muscle tension, sweating, rise in blood pressure and change in blood supply to brain and other important organs.” The “startle response” has not been formerly described in dentistry. We propose the startle response could impact patient care in dentistry. A review of the literature regarding the “Startle Response” in aviation and medicine may help better measure its practical impact on safety, and identify mitigation strategies. These strategies can be modified for, targeted specifically and applied to education and training of dental care providers.

Actions, Methods or Intervention

This work represents a Scoping Review of the literature for the term “Startle Response” as described outside of the traditional dental realm. Somewhat interchangeable terms, “Startle Effect” and “Startle Reflex,” were also considered. Multiple literature search strategies results were reviewed by the authors. Inclusion criteria were based on a collective discussion amongst the authors. The goal was not an exhaustive search, but merely a search of sufficient substance to support the notion that “startle response” exists in dentistry.

Results

Identified factors in aviation highlight the startle response as a real threat in particular situations due to their ability to potentiate mistakes made by pilots while in flight. Additional research has indicated that simulation and non-simulation training should include “startle events” in such a way that the trainees are caught off guard, thus simulating a real event more accurately. Within the realm of dentistry, these stimuli can be divided largely into two categories: 1) medical emergencies; 2) mistakes made by dental care providers. More robust characterization of these stimuli to the “startle response” may lead to future changes in education strategies in dentistry as viewed from a human factors perspective. As in aviation, education and training in dentistry should include “startle events” in such a way that the trainees are caught off guard and learn ways to mitigate its effects in patient care.

Lessons Learned:

The concept of Startle Response has yet to be recognized and specifically described in dentistry. Significantly though, there is literature found in other fields, particularly aviation and medicine. The translation of relevant information regarding “startle response” from other fields to dentistry will help in the training of future dental health care providers.

Future Applications and Next Steps:

Going forward, further studies must be conducted to identify, characterize, and define the startle response in dentistry. Future root cause analysis of adverse events in dental practice may uncover this component of human factors research. These efforts would help to construct a safer practice environment for both providers and patients by providing providers with appropriate training and preparation.

4-Year Analysis of Student Self-Assessment of Preclinical Restorative Tooth Preparation

Mary Ellen McLean, Stephen Bayne, Mark Fitzgerald, Tracy Deperalta, Elizabeth Van Tubergen and Elizabetha Karl

BACKGROUND:

Student self-assessment is important to confirm learned principles/concepts and should benefit from future active training. The objective was to evaluate student self-assessment (without formal training) versus faculty assessment in preclinical restorative dentistry over 4 years to establish a baseline for future self-assessment training.

METHODS:

Class-II amalgam cavity preparations were evaluated by one faculty (F1 or F2, Director) and each D1 student (S=105) for published criteria (C1=External Outline Occlusal, C2=External Outline Box, C3=Internal Outline Occlusal, C4=Internal Outline Box, C5=Resistance, C6=Retention, C7=Finish, C8=Rubber Dam Use) and reported as S=F agreement (%) over 4 years (2010-2013). Yearly comparisons (ANOVA, $p \leq 0.05$), patterns (S<F, S=F, S>F), class trends (T= top quarter, M= middle half, B= bottom quarter), and regressions (r^2 , final exercise grade vs agreement) were computed. An initial target of 85% was adopted.

RESULTS:

The results are reported below for assessment agreement:

[Year-Faculty] [S=F(%) for C1,C2,C3,C4,C5,C6,C7,C8] [Total X+/-sd, Stats]
[2010-F1] [50%, 55%, 39%, 46%, 44%, 38%, 55%, 63%] [Total= 49+/-18%, a]
[2010-F1] [57%, 58%, 49%, 42%, 40%, 34%, 52%, 66%] [Total= 50+/-20%, a]
[2012-F1] [39%, 48%, 49%, 48%, 47%, 36%, 61%, 71%] [Total= 50+/-20%, a]
[2013-F2] [66%, 62%, 73%, 56%, 73%, 57%, 68%, 66%] [Total= 65+/-20%, a]

Overall agreement was consistent for three F1 years (49-50%), higher for F2 year ($p \leq 0.05$), and far short of 85% targets. Categorical levels for F2 (56-73%) versus F1 (34-71%) were mostly higher. Categorical patterns were similar (except C6 worse and C8 better). Within categories and years, minor trends showed better performance for T and students grading themselves better than faculty. Regressions (r^2) of agreement versus grades are shown below. Generally, $r^2 = 0-0.50$ is poor; $0.50-0.70$ is fair; and $0.70-1.00$ is good. There were no important r^2 trends for T-M-B or C1-C8 analyses.

[Year-Faculty] [Top 25%, Mid 50%, Bottom 25%] [Overall]
[2010-F1] [$r^2 = 0.32, 0.14, 0.14$] [$r^2 = 0.27$]
[2011-F1] [$r^2 = 0.23, 0.03, 0.00$] [$r^2 = 0.17$]
[2012-F1] [$r^2 = 0.07, 0.06, 0.10$] [$r^2 = 0.13$]
[2013-F2] [$r^2 = 0.20, 0.14, 0.05$] [$r^2 = 0.23$]

LESSONS LEARNED AND CONCLUSIONS:

Overall S=F agreement levels (49-65%) were mediocre and well below 85% target levels, suggesting self-assessment training might be needed. There were differences between faculty graders (F1 and F2), minor trends among categories (C1-C8), and no correlation of assessment performance with exercise grades (r^2 analysis). Because the self-assessment occurred at the end of the laboratory exercise, some students may have taken less time to complete the process. We probably need to control the timing for the self-assessment more rigidly to assure that the most thoughtful effort is occurring with all students.

NEXT STEPS:

Self-assessment data is being compared to peer-assessment data. The effects of (1) self-assessment training and (2) frequent repetition are being evaluated on the level of student performance. The assumption continues to be that students who understand the principles and concepts the best will be better at self-assessment.

Comparing student feedback platforms: Paper vs. Web-based vs. Mobile

Nauman Chaudhry, Maya Hammoud and David Hughes

BACKGROUND:

Instructor feedback is vital in training medical students to become practiced clinicians. As students venture into the wards, they're expected to utilize the skills they learn as medical students, including patient interviewing, performing physical exams, and patient communication. This project aims to compare the traditional method of collecting feedback (paper feedback cards) with two digital methods: email collection through Qualtrics surveys and collection through the Med School Mobility mobile application.

ACTIONS:

As medical students rotate through different clerkships they're required to receive feedback in the form of feedback cards. These cards contain checklists and written comments with the goal of helping student's gauge their own progress and improve the on their skills. In order to increase responsiveness and use, the Surgery Department shifted their feedback cards into a web-based Qualtrics survey. Students receive the survey via email and select a faculty member they worked with. The faculty member that is selected then receives an email with the student's request and provides written feedback to the student. Meanwhile the Obstetrics & Gynecology Department uses the Med School Mobility mobile application for feedback. Within the app students can pull up the digital feedback forms, and have the evaluating physician fill it out and submit it.

RESULTS:

Paper feedback cards, while effective, continue to be inferior, in many aspects, to the digital formats. Unlike digital cards, paper cards can be misplaced, must be printed, carried around at all times, and once submitted are no longer accessible to the student. On the other hand, digital cards continue to be accessible to the student after submission and administratively are easier to manage than paper cards. The web-based cards are more flexible as they can be done at anytime from anywhere. Likewise the mobile app excels in usability and access; however, the app goes one step further by incorporating multiple feedback systems into its own platform. Furthermore the app acts as a hub for medical students even going beyond the scope of feedback.

LESSONS LEARNED:

Digital feedback platforms are quickly replacing the traditional paper formats. The adoption of these new platforms demonstrates their acceptance and their superiority especially in terms of research potential, accuracy, and usability. With that in mind, security and integration are the biggest areas of concern and must be continuously evaluated and addressed.

FUTURE APPLICATIONS AND STEPS:

Both digital platforms show promise for application into other clinical settings. The mobile platform's ability to unify different modalities of feedback (paper and web-based) into its own platform allows it to expand much further than web-based or paper alone. Current work includes integration through APIs to incorporate the Surgery Department's web-based system (i.e. Qualtrics) into the Med School Mobility app. Furthermore; we are in the process of developing and testing modules to expand the app further (i.e. attendance tracking). Planning is underway to reach out to other intra-campus schools and outside universities to assess interest beyond the University of Michigan Medical School.

Optimizing Questioning Methods for Effective Intraoperative Teaching

Meredith Barrett, Christopher Magas, Priya Dedhia, Larry Gruppen and Gurjit Sandhu

Background:

The use of questioning to engage learners is critical to furthering resident education intraoperatively. Previous studies have demonstrated that higher-order questioning and optimal wait times (>3 seconds) result in learner responses reflective of higher cognition and improved knowledge retention. Given the importance of intraoperative learning, we investigated question delivery in the operating room.

Actions, Methods, or Intervention:

12 laparoscopic cholecystectomies were observed and video recorded. All questions were transcribed and classified using the revised Bloom's taxonomy, a framework associated with hierarchical levels of learning outcomes. Historically, Bloom's taxonomy classifies questions on six levels, with each successive level related to higher-order learning. The sixth level, creating, which involves the development of novel techniques, was outside the scope of this study as house officers are largely learning to develop their skills and would be unlikely to cultivate a novel technique. The remaining five levels, and representative example questions, are: (i) remembering- "what is this artery?", (ii) understanding- "are you making progress?", (iii) applying- "where is the epigastric port going to be?", (iv) analyzing- "how can you make our view better?", and (v) assessing- "are we going to be able to do this laparoscopically?". In addition to question classification, the wait time between question end and response was also recorded.

Results:

6 faculty attendings and 7 house officers at our institution were observed. A total of 133 questions were recorded with an average number of questions per case of 11.2 (9.5 questions/hour). The majority of questions 112/133 (84%) were classified as Bloom's levels 1-3, with only 6% of questions of the highest level. Increased PGY level did not alter the complexity of questioning. The wait time before the resident answered the question averaged 1.75 seconds, with attendings interceding after 2.50 seconds.

Lessons Learned:

Intraoperative questioning is not aligned with higher level thinking for resident learners. The majority of questions were Bloom's level 3 or below, limiting the complexity of answer formulation. Additionally, most resident responses were given within two seconds, hindering the opportunity to pursue higher-order thinking through answer formulation.

Future Applications and Next Steps:

The operating room is a unique and often stressful educational environment which can make learning a challenge. Yet, intraoperative teaching of residents is essential for producing competent and confident surgeons. The majority of questions asked by attending surgeons remain at lower cognitive levels, presenting a robust opportunity for teaching development. Encouraging faculty attendings to include higher level questions, increase wait times and tailor question complexity to learner level may improve retention and maximize the educational gains from each case. Also, with faculty attendings answering 20% of questions asked, being mindful of wait times, and allowing at least three seconds after question conclusion offers another potential area for faculty teaching development. In the context of the operating room it is imperative attendings guide residents into achieving incrementally higher cognitive levels by allowing for increased wait time after asking questions and using increasingly complex questions.

Using Instructional Design Theory to Develop a Clinical Reasoning Curriculum

Michelle Daniel, Michael Cole, Robert Huang, Nikhil Theyyuni, Steven Rougas and Sandro Cinti

Purpose: Clinical reasoning is a core component of medical education, yet few curricula grounded in instructional design theory have been described to teach this complex task to preclinical learners.

Need for Innovation: The designs of many current preclinical curricula can lead to knowledge compartmentalization through the separation of cognitive (basic science) from affective and psychomotor (clinical skills) domains, and encapsulation and fragmentation through organization into “organ system” blocks, creating an inability for students to think across systems when presented with real-life clinical problems. Whole task approaches to teaching clinical reasoning may overcome these barriers and optimize transfer of this complex skill into clinical practice. Four component instructional design (4CID) is one whole task approach to curriculum development that has recently been applied to other areas of medical education, including teaching evidence-based medicine and communication skills. ,

Methods: A case-based curriculum comprised of common chief complaints was developed and implemented using the guiding principles of four-component instructional design (4C/ID) theory at two institutions (Brown University and University of Michigan School of Medicine). The curricular blueprint contained four task classes with 1) learning tasks, 2) supportive information, 3) just-in-time information, and 4) part task practice. The curriculum employs variable whole task practice with cases sequenced from simple to complex along several dimensions (i.e. number of presenting problems, breadth of possible systems involved, extent of the past medical, social and family histories, case ambiguity, complexity of the diagnostic and treatment plans, etc.) This deliberate sequencing aims to reduce cognitive overload on novice learners by keeping them just in their zone of proximal development. The curriculum was first implemented in 2013-14 at Brown for second year medical students, and the case sequencing and complexity were revised based on feedback for 2014-15. A similar curriculum was started for first year medical students at Michigan beginning with the 2015-16 academic year, with minor modifications to accommodate more novice learners.

Outcomes: Students at Brown consistently rate the clinical reasoning curriculum as highly valuable (4.41 / 6, n = 103 in 2014, 4.58 / 6, n = 118 in 2015) and asked to be introduced to clinical reasoning cases even earlier in their training. Clinical reasoning, as demonstrated in students’ case write-ups and on OSCE post-encounter notes appeared more robust after curriculum implementation, and scores improved compared to historical controls (3.55 versus 3.78/5.0 p<0.03, and 3.65 versus 4.0 p<0.001, respectively).

Strengths and Areas for Improvement: The strengths of this curriculum lie in it’s grounding in a theoretically sound instructional design model, 4CID. The true test of success will lie in student performance on clinical reasoning tasks in the clinical arena. It can be more challenging to measure outcomes in this setting, but a systematic review of case write-ups, and oral presentations during clerkships may provide indirect evidence of curricular success.

Transferability: The curricular blueprint may be easily modified to align with other institutions’ preclinical curricula, as demonstrated by the ability to roll out a similar curriculum in Michigan to what was utilized at Brown. By adjusting the content and complexity of the learning tasks, and the degree of scaffolding offered by the supportive and just in time information, the curriculum can accommodate different learner levels, and fit within a multitude of curricular structures. Ideally, a faculty lead familiar with 4CID, and the cognitive theory upon which it is based should champion implementation to ensure adherence to the model.

What Simulator is Best? The Creation and Evaluation of the Simulator Value Index Tool

Deborah Rooney, Benjamin Covington, Patrick Dionise, Michael Nykamp, Melvin Pederson, Jamal Sahloul, Rachael Vasquez, Harold Pinsky, Domenica Sweier and James Cooke

BACKGROUND: Currently, there is no reliable, standardized mechanism to support technicians, faculty, administrators, and leadership during the simulator evaluation and procurement process. We propose a tool founded on best practices could be used to facilitate the simulator evaluation and purchase process.

METHODS: In a three-phase process, we identified top factors considered during the simulator purchase process, created a tool for the use of guiding simulator purchases, and then evaluated the resulting tool, called the Simulator Value Index (SVI) tool. To evaluate the final tool, a web-based survey was sent to targeted simulation professionals. Participants (n=55) used a simplified version of the SVI tool, and offered opinions about it. We evaluated the tool's practical value by calculating its sensitivity to predict a preferred simulator. Five variations of the SVI tool were considered.

RESULTS: Top 17 factors were identified and ranked, with top two as Technical stability/reliability of simulator and Customer service, with no practical differences in rank across institution or stakeholder role. Phase 3 analyses indicated two variations of the SVI tool were able to successfully predict the preferred simulator with 87% sensitivity, while the variation considering Cost and Customer service and Cost and Technical stability, sensitivity decreased to 44%. The majority (75%) of participants agreed that the SVI tool was helpful at guiding simulator purchase decisions and 91% agreed the SVI tool would help facilitate discussion with peers.

LESSONS LEARNED: Preliminary findings suggest the SVI tool can be used to aid the simulator purchase process, and be used to facilitate discussion with peers using a standardized framework. Sensitivity of the tool is increased when considered factors extend beyond traditionally targeted factors—cost, and customer service or technical stability. We are hopeful that simulator purchase processes might include the SVI tool facilitate discussion amongst healthcare simulation professionals. Limitations and application of the tool are discussed.

NEXT STEPS: Future work might include investigation of the SVI's ongoing value when scores are aggregated over time.

Listening to What Medical Students Value in a Mentored Path of Excellence Program Focusing on Global Health and Disparities

Patricia Mullan, Jason Bell, Katherine Hughey, Emily Crowley and Brent Williams

Background. An emerging trend to extend the scope of traditional medical education curricula has been the introduction of programs of scholarly concentrations, in which students extend the scope and depth of their learning by participating in longitudinal programs that often feature applied projects, mentorship opportunities, as well as formal didactic instruction, and interaction with their peer students sharing an interest in the scholarly concentration.¹ The University of Michigan School of Medicine launched its mentor-facilitated program of scholarly concentrations – termed “Paths of Excellence” – with the establishment of a Global Health and Disparities (GHD) program.^{2 3} Both the participating students and faculty advisors are voluntary, participating in program experiences in addition to their required curricular and clinical responsibilities. To maintain the integrity of the co-curricular experience, students could decide not to complete a capstone project or withdraw from the program without academic penalty.

Actions, Methods, or Intervention. This study draws on the responses of 2015-2016 graduating fourth-year medical students to an anonymized survey about their experience in the co-curricular GHD program. Structured questions asked students to rate features of the GHD program, particularly in terms of: the students’ overall program experience; the value defined program features provided to the students; and the impact of the program on students’ professional development. The response scale for structured Likert-format evaluation questions ranged from 1 to 5, with higher numbers representing more favorable response. Open-ended questions asked students to reflect on: the strengths of GHD as they experienced it; what changes might improve the program; what did you learn from your participation that you might not have gained from traditional medical school learning; how did GHD most influence you.

Results. The response rate of our graduating fourth-year medical students was 82% (n=27), with 70-87% of these students writing responses to open-ended questions. The range of the modal (most frequently occurring) response to all structured program evaluations was 4-5, indicating “agree” or “strongly agree.” Program features that students rated GHD as delivering found highest mean ratings for: “access to medical students who shared my interest in this topic” (Mean=4.8) and “access to role models with an interest/academic focus in this topic” (Mean=4.5) In terms of program components students rated as providing high value to them, highest mean ratings were for “GHD advisor” (Mean=4.4), “interaction with other students” (Mean=4.3), and the “capstone project.” Students’ highest mean ratings of the impact on their professional development were accorded to “interaction with other students” (Mean=4.5), “GHD advisor (Mean=4.3), “Capstone project” (Mean=4.3) and “Other GHD faculty (faculty other than your advisor)” (Mean=4.2.)

Lessons Learned. The UMMS experience with its first scholarly concentration indicates that features that they experienced the program as delivering were of value to them and had an impact on their professional development. These valued features included interaction with other students sharing their commitment to GHD and access to role models and advisors.

Future Applications and Next Steps. The overall program evaluation for the Paths of Excellence includes evaluation of students’ capstones, completion and dissemination of scholarly products, and career outcomes.

Best Practices for Finding Best of Breed Software

Emily Springfield

Abstract:

The School of Dentistry is currently searching for “best of breed” software. Instead of finding one software package that does everything, we are looking for a suite of software to track complex learning, including:

- Log of clinical cases
- Graded clinical test cases
- Traditional tests
- Individual and group “homework” like cases and group projects
- One-stop-shopping for “what do I need to do now?”
- Reducing differences between lab and clinic

This poster would describe our process, from determining the features needed to methods of finding software that meets those needs.

Process steps:

- Find and print out all assessments
- Note similarities and differences
- Create user scenarios – common and extraordinary
- Critical point: Try to build consensus around HOW we assess
- Search for software
- View demos and ask key questions, esp around integrations (SSO, APIs, etc.)
- Diagram workflows
- Sandbox scenarios above
- List pros/cons; diagram how parts fit together

Attention will also be paid to interoperability using APIs and LTIs – protocols for ensuring different software packages can share data across platforms. This kind of sharing is critical for next-generation data management and the core function of the “best of breed” approach.

Google Glass in Medical Education: Patient Interviewing

Clifford Craig and Grace Trinidad

Background:

A valuable aspect of the standardized patient and patient interview experience for medical students is the ability to look back at the recording of their own interview and take note of their physician presence—how they communicate with a patient, and what they conveyed to the patient in their interview. Although adequate in capturing audio and the dialogue present during the interview experience, wall-mounted recording devices lose some fidelity of experience—subtleties of body language and expression are often lost.

In this trial of Google Glass, we compare and contrast the experience of recording the medical student patient interview with standard recording devices versus the experience of recording via Google Glass—a completely point of view (POV) perspective that displays back to the student their body language and communication style from the perspective of the patient. We examine the virtues not only of POV recording, and the benefits gained from employing this recording perspective, but investigate the possibilities of Google Glass and similar wearable technologies in medical education. This exploration of Google Glass, an augmented reality, is ongoing, and is occurring alongside a similar exploration of the capabilities of other augmented and virtual reality technologies.

Methods:

Nine M1 students participated in a one-hour Google Glass orientation to familiarize themselves with the Glass before performing their first patient interview as medical students. After the orientation, students were given the option of opting out of the Google Glass trial, one student decided against conducting the patient interview with Google Glass.

Each patient interview lasted 7-10 minutes. The students in the Google Glass trial were asked via email to follow up and comment on the experience of recording and viewing their interview session.

Results:

The students' response to POV recording was positive, and they felt they gained a great deal after reflecting on their recordings. The students were also enthusiastic about future applications of Google Glass and other novel technologies in their medical education.

The Glass was, however, difficult to use—battery life is poor forcing students to keep the device plugged into power during use.

Lessons Learned:

POV recording is tremendously valuable and gives the students the opportunity to assess many features of their communication styles. The reflections of the students indicated that this was more valuable and more helpful than wall-mounted or profile-view recording angles.

The Google Glass interface is unlike any other computing interface and does take some time to grow accustomed to. General use of Google Glass in medical education may be improbable, at least with the Explorer version purchased in the first release. A redesigned version of Google Glass (known as Project Aura) was recently announced and is due for release sometime in 2016.

Future Applications and Next Steps:

This examination of Google Glass in the patient interaction experience is ongoing. We would like to examine the changes the students made to their behavior after reflecting on their recordings, and follow up with these same students at their M2 patient interview.

Facilitating Learning with Curriculum Change in PM&R Musculoskeletal Education

Clifford Craig and Grace Trinidad

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Teaching End-of-Life Care to Resident Physicians Using Clinical Simulation

Christina Chiang, Scott Kelley, Ketti Petersen and Patricia Mullan

BACKGROUND

Resident physicians receive limited education on end-of-life care despite it being a common clinical responsibility; clinical simulation may be a way to effectively bridge this gap. This study explores the feasibility of using an educational intervention, composed of a didactic slide presentation followed by a high-fidelity clinical simulation, to improve resident physicians' comfort and knowledge regarding end-of-life care.

METHODS

Thirty-five resident physicians at the University of Michigan Family Medicine Residency Program completed this educational intervention while rotating through the Clinical Simulation Center (CSC). Participants submitted responses to a pre-participation questionnaire, utilizing a 7-point Likert scale and multiple choice questions, to measure their comfort and knowledge about end-of-life care. Then, they reviewed a slide presentation regarding end-of-life communication and symptom management. During their end-of-life CSC session, participants took part in a high-fidelity simulation using the METI Human Patient Simulator, caring for a patient in an expected inpatient mortality case. The simulation included two instructors role-playing as the patient's family member and nurse. Debriefing with participants occurred immediately afterward. One half of the participants, selected by stratified randomization, repeated the online assessment at the start of the CSC session, while the other half of the participants completed the questionnaire at the end of the CSC session. Changes in participants' self-reported comfort and demonstrated knowledge about end-of-life care after each component of the educational intervention were analyzed using paired t-tests at the conclusion of data collection.

RESULTS

The group re-tested after reviewing the slide presentation demonstrated significant improvement in self-reported comfort level with providing end-of-life care ($p < 0.05$). The group re-tested after the simulation reported significantly more agreement ($p < 0.05$) with the statement "there is adequate education during residency regarding end-of-life care." Both groups showed a significant increase in feeling prepared to provide end-of-life care to patients pre- versus post-test ($p < 0.05$). There was a significant improvement in medical knowledge scores about end-of-life care in both groups ($p < 0.05$). The relative increase in resident knowledge with the addition of clinical simulation amounted to a moderate effect size of 0.44.

LESSONS LEARNED

Our results were confounded by higher baseline experience with end-of-life care in the pre-simulation group. Additionally, some groups participated in an additional post-debrief simulated cases, while others did not, based on time constraints. The participants who completed two cases may have gained more due to engaging in deliberate practice. These discrepancies should be resolved in future research efforts.

FUTURE APPLICATIONS & NEXT STEPS

This study characterizes a successful and effective graduate medical education adaptation to an under-addressed aspect of routine patient care, with improvement in resident satisfaction with residency-provided end-of-life education. Next steps include continuing this intervention in the residency's core curriculum and expanding it to include other difficult scenarios, such as discussing goals of care or navigating conflict between a patient's family members.

Comparison of Clinical Judgment of Nursing Students: Use of Simulation to Enhance Clinical Experiences

Deborah Lee, Maureen Westfall, Michelle Aebersold, Ray Blush, Heidi Mason and Kim Bradshaw

Background

Clinical decision making is a complex skill essential for safe, quality patient care. Demand on nursing programs to find clinical experiences is increasingly challenging. Maternal-newborn sites have additional challenges related to work load, gender bias, and a more litigious environment. Simulation experiences are being utilized for the BSN students to facilitate active learning and foster a greater understanding of critical thinking and clinical reasoning. Simulation provides an opportunity to demonstrate and develop clinical judgement in the clinical environment and is being used to enhance clinical experiences. Few studies were found in the literature related to clinical decision making skill development when simulation replaces clinical practicum.

Actions, Methods, or Intervention:

The University of Michigan School of Nursing has opened a new School including a State of the Art Clinical Learning Center and Simulation Suite that enables students to apply their skills prior to or in place of patient interaction in the clinical setting. The research aims of this study are to compare clinical decision making scores for two student groups. The first of which received 2 hours of simulation along with the standard maternal-newborn rotation while the second had 50% of their time replaced with a total of 48 hours of simulation in addition to the standard rotation. We hypothesize that there will be no difference in clinical judgement between those who participate in the enhanced maternal newborn simulation experiences compared to those who had the usual maternal-newborn clinical practicum experience. Utilizing high fidelity simulation methods, BSN students engaged in evaluative scenarios that were recorded and will be scored by School of Nursing faculty using the QUINT Clinical Judgement measurement tool. Students will be evaluated on their ability to identify pertinent and subtle information that develops patterns of deterioration. They were challenged to continually adjust and prioritize patient care as the client deteriorates as well as support families in complex situations. Communication will be scored for clarity and consistency.

Results:

The evaluative simulations have been recorded for both groups of students. The simulation recordings will be viewed and scored by clinical faculty using the Quint Clinical Judgement measurement tool. Composite scores will be calculated and used for data analysis. Associations between the mean composite Quint scores for each group will be examined using independent sample t-test.

Lessons Learned:

Outcomes for BSN students include no anticipated significant differences in the Quint composite scores between the two groups thus indicating that simulation is as effective for developing clinical judgement skills as clinical experiences.

Future Applications and Next Steps:

Further data analysis will be performed to determine if any demographic characteristics are associated with clinical judgement skill attainment. Next steps will be compare graduate level students using simulation to develop clinical judgement skills.

Helping Students to Evaluate Their Learning – There Are Apps for That

Michael Hortsch

Background: Efficient time management is a major concern for today's students. Students want to know whether they have learned the required material and developed the skills to do well in an upcoming examination. Based on a simple PowerPoint file format, I developed a quick and easy review resource that can be easily adapted to many fields of study and has also been converted into a series of mobile smartphone and computer tablet applications, which are available under the SecondLook™ label.

Actions, Methods, or Intervention: The SecondLook™ tools help students to self-review the required learning material, as well as gauge their knowledge and analytical skills. Originally produced as a series of PowerPoint files, the different sets are now available as mobile applications that are compatible with iOS and Android smartphones and tablets. Each PowerPoint file/app set covers the material of a specific subtopic on 10-35 slides, each slide containing images with 1-8 questions. A click/tap reveals the answer together with any follow-up question. The questions on each page are asked sequentially in a logical succession, one question usually building on the answer to the previous question. The questions use a variety of open-ended formats, avoiding a "select-the-best-answer" MCQ design. Each set takes 10-15 minutes to complete, enabling students to quickly uncover deficiencies and allowing them to target their study efforts to filling these gaps. This didactic approach relies heavily on active learning and uses technology and electronic devices. Students receive immediate feedback, often with a brief explanation why an answer is correct. To expand the accessibility of the SecondLook™ tool, the U-M Medical School's Learning Design and Publishing team has generated a strategy that allows the easy translation of the original PowerPoint files into HTML-based applications for a range of mobile devices. The mobile application version has several features not available with a PowerPoint file, such as a slide randomizer function, easy navigation, question and page indicators, and a limited zoom ability. New SecondLook™ series for Neuroanatomy, Musculoskeletal Gross Anatomy, and Oral Radiology have been completed and will be published at the iTunes and the Google Play store.

Results: Over 95% of recent U-M medical students named the Histology SecondLook™ resource as one of their three most important learning resources. The full applications are available to University of Michigan students and faculty for free from an Enterprise server. Non-University of Michigan users can download a free sample app or purchase the full apps from the iTunes or Google Play stores. Since its release 3.5 years ago, the various versions of the SecondLook™ Histology application have been downloaded over 15,000 times from over 120 different countries.

Future Applications and Next Steps: Additional SecondLook™ series for Basic Medical Radiology, Embryology and Gross Anatomy are under development. Making SecondLook™ mobile applications available for a wide range of basic science and clinical topics will encourage students of the health sciences to apply a scientific approach to learning.

Reference: M. Hortsch: Taking a SecondLook™ at a Time-Efficient Self-Review Resource. *Med. Sci. Educ.*, Vol. 26(1), 3-4, 2016.

Using a Longitudinal Remediation Program to Improve Third-Year Students' Communication Skills

Laurie L. Whitman, Paula T. Ross, David C. Belmonte, Helen K. Morgan, Margaret S. Wolff, Joel A. Purkiss and Sally A. Santen

Background

Third-year medical students rarely have time in a busy clerkship schedule to remediate communication skills deficiencies. We developed an innovative program to provide students with initial corrective feedback on communication skills deficits as well as opportunities for continued skill development through guided self-reflection and ongoing feedback on standardized patient (SP) encounters.

Actions, Methods, or Intervention

All medical students complete the second year comprehensive clinical assessment (CCA) prior to starting their clinical third year clerkships. Communication skills scores between 70% and 79% were considered marginal. Scores less than 70% are failures and students were remediated through a different CCA protocol. Based on marginal performance on the communication skills portion of this exam, thirty-six students were automatically enrolled in the Office Hours (OH) program.

Enrolled third-year students (M3s) were required to review selected resource articles, view a reference video for communication skills, one of their own video interviews from the CCA, and complete a self-assessment. After each of their 5 third-year SP activities, students received oral feedback on their communications skills on previously identified areas of concern and developed improvement goals for their next SP activity. This longitudinal performance feedback was also sent to each student before the year four CCA, immediately after the conclusion of their third year clerkships.

Results

At the completion of the OHP, the M3 OH students increased their mean communication skills score from 73.5% (year two CCA) to 86.5% (year four CCA), reflecting a significant difference between students' performance on these two exams ($p=0.01$).

Lessons Learned

Helping students track their areas of concern and establish goals are effective strategies for addressing deficits in communication skills.

Future Applications and Next Steps

Since few students fail to respond to this practice, next steps are to implement a protocol for students who could benefit from a more individualized intervention.

Virtual software to personalize student learning in a required pharmacy course

Kayla Ambroziak, Nour Ibrahim, Vincent Marshall and Sarah Kelling

Background: There is significant variation in the amount and type of experience related to pharmacy practice that students have prior to entering a professional pharmacy program. Historically, Pharmacy Practice Skills I (P504) has been taught using the traditional hands-on medication dispensing approach in a laboratory setting.

Objective: To determine the applicability of virtual medication dispensing in preparing students for real-life medication dispensing and to design a course in which previous professional experience (defined as working in a pharmacy) is accounted for in order to make the course relevant for each student.

Intervention: First year (n=85) pharmacy students at the University of Michigan College of Pharmacy enrolled in P504, Pharmacy Practice Skills I, in the Fall 2015 semester were taught medication dispensing primarily using a virtual online medication dispensing program. Each week the students had access to six optional, non-graded practice modules. These practice modules correlated with the topic being taught the week of, and emphasized the skills the students need to know by the time the students attend their required lab session.

Results: While there was significant variation in the number of optional exercises completed (1-30), linear regression did not show a statistically significant correlation between amount of previous pharmacy experience, number of optional practice exercises, and student scores on the final virtual medication dispensing exercise. The most common elements of P504 that students reported helped them to learn medication dispensing were MyDispense and lab practice.

Lessons Learned: Overall, students--both with and without prior pharmacy experience--believed that virtual medication dispensing was a helpful tool for learning about medication dispensing in the outpatient setting. Areas for improvement include overcoming technology issues (e.g., difficulty logging into the program) and making sure that material through the course aligns with the virtual medication dispensing program capabilities.

Future Applications & Next Steps: Opportunities for incorporating virtual simulation programs should continue to be explored by healthcare professional education programs as this allows students to practice skills in a safe, yet realistic environment. Classes can be structured so that students can choose the amount of practice that corresponds with their knowledge and comfort level with the material.

Pilot Nurse Practitioner Electronic Health Record (EHR) Simulation: Learning by Using a High-fidelity Case in the Vista-for-Education EHR

Patricia Abbott, Katherine Nelson, Shannon Fearday, Flynn Allen, Knight John, Alison Ulicny, Laura Gultekin, Eric Smith, Johmarx Patton and Charles Friedman

Background: Electronic Health Record (EHR) systems can enhance simulations of clinical cases and care delivery. However, it is not clear how to combine education about EHR use with clinical training in a single educational intervention. Within the University of Michigan Schools of Nursing (UMSN) & Medicine (UMSM), a pilot simulation was conducted in March of 2016 using an active-learning curriculum and the Vista-for-Education (VFE) open source EHR system. Insights were gained that will be applied to further develop patient care simulations that combine both EHR skills development and clinical practice learning objectives.

Intervention: Twelve acute-care pediatric nurse practitioner (ACPNP) graduate students participated in a three hour, hands-on, EHR-based pediatric clinical simulation. This experience was conducted in the Clinical Simulation Labs (CSL) at the new UMSN. Preparing for this experience required the development and uploading of a longitudinal simulated clinical record into VFE. The simulation combined the following learning objectives for general use of an EHR with PNP learning objectives:

- EHR use learning objectives ACPNP learning objectives
- Review patient chart in the EHR
 - Create accurate problem list
 - Write brief progress note in the EHR
 - Develop differential DX
 - Place lab orders
 - Develop plan of care
 - Update allergy information
 - Review and analyze allergy info
 - Place medication orders
 - Reconcile medications for patient
 - Identify known EHR safety issues
 - Cite strategies for using EHRs with patients

Methods: The VFE system, developed as part of a prior grant, is administered through the UM Medical School Information Services cloud. Students read, reviewed, and interacted with VFE in the course of a high fidelity simulation with a pediatric mannequin and an actor parent. The simulation case, developed by the ACPNP faculty, involved the assessment of a 5 year old asthmatic child in an acute care environment and was directed to achieve the objectives listed above.

Results: A post-experience online survey was administered, to which 11 of 12 students responded. Confidence in EHR use after the simulation improved as did the perception of preparation for future EHR-based clinical simulations. Students generally believed that they felt better prepared to enter clinical practice after this experience.

<STATS GRAPHIC HERE>

Students also commented on the simulation's benefits. For example "It was very helpful to think about using an EHR as a NP and to begin transitioning from being a RN using the EHR to being an NP." Students also made suggestions for improvement: "I felt a little lost, so maybe more guidance as to how to use VFE and what to expect prior to the simulation is needed."

Summary of Lessons Learned and Next Steps: This small scale pilot was beneficial in several ways. Students responded positively to the experience. Creating such a simulation for very experienced and system-savvy RNs (the ACPNP students) was challenging, requiring a team approach by health professional educators, informaticians, and programmers to bring the synthetic patient "to life" and to situate realistically within clinician workflow. There was significant (albeit anecdotal) joint learning across the team. Students and faculty look forward to additional similar experiences, and additional case developments and a major VFE upgrade are underway.

Dental Students' Perceptions on the Current Use of Learning Management Systems at the University of Michigan School of Dentistry

H Mark Pinsky, Dillon Dewundara, Parker Duncan, Emily Hill, James Hulderman, Alexander Shore, Jackson Witcomb, Deborah Rooney and Domenica Sweier

Introduction & Background

Technology has made its way into the world of academia through the development of learning management systems (LMS), online platforms which provide students access to information and assignments for their courses. Like other institutions, University of Michigan School of Dentistry (UMSOD) employs multiple LMS. Anecdotally, UMSOD students report being overwhelmed by the amount of information presented. There are 10-15 different courses taken each semester of their first year, each with unique methods of correspondence and information delivery, including CTools, MiTools, Gmail, Foliotek, Box, and other unique websites, increasing the risk for inconsistency, and potentially leading to decreased communication between professors and students regarding classroom work, announcements, and deadlines.

We propose that identification of the difficulties associated with multiple modes of communication may help guide better use of these technologies to improve dental students' learning experience.

Methods & Materials

Phase I: Analysis of syllabi information and authors' personal first year experiences was used to identify online resources used to access critical course information.

Phase II: Following review and exempt determination by UM IRB, an anonymous survey was disseminated to all first through fourth year dental students to measure students' attitudes and satisfaction with different online platforms and LMSs currently utilized at UMSOD. The survey consisted of 12 multiple choice and rating scale questions, with a 13th open answer question. The aim of the survey was to assess the students' attitudes and perceptions regarding the ease of access of information, communication with instructors, their desires for change in the current system, and the current measures they rely on to remain informed.

Results

Response rates for D1, D2, D3, and D4 classes were 76.6%, 64.8%, 41.9%, and 23.5%, respectively. Overall, 56.8% of all UMSOD students self-reported being overwhelmed by the number and types of online resources, while 68.5% relied on word of mouth communication, 80.9% used social media as a supplemental source of mandatory school information, 84.6% believed faculty should be required to use canvas in a uniform manner, and 97.3% were in favor of a protocol that streamlines all information into a single destination.

Lessons Learned

Making schedules, materials, announcements, and assignments more consistent would be accomplished through a standardized protocol of how course directors are to use Canvas. This would improve students' processing of information, as well as consistency, predictability, ease of access, and ability of students to self-manage and select preferences. Details of student -suggested protocol will be reviewed.

Conclusions

Having a protocol in place for using an LMS would allow for consistent, predictable, uniform communication regarding schedule, materials, announcements, and assignments. Such standards would improve students' processing of information, as well as improve consistency between courses, and aid ease of access.

Virtual Dissection: Improving Student Learning with the Anatomage Table

Melissa Gross, Karen Guerin and Chase Masters

Background. Students in many of the Health Science schools at UM need to learn human anatomy. For centuries, active learning of anatomy has involved dissection of human cadavers, but access to this experience is limited for undergraduate students. With support from a TLTC grant, the Schools of Kinesiology and Dentistry and the UM Library, a new digital resource for life-size virtual anatomical dissections is now available in the Taubman Health Sciences Library. The Anatomage Table enables students to actively explore human anatomy, conduct their own virtual dissections, and to create and label their images of anatomical structures. With their fingers, users can rotate the virtual body and cut in any direction.

In F15-W16, we incorporated use of the Anatomage Table into undergraduate anatomy courses in the School of Kinesiology. Our objectives were to: (1) assess student interest in the Anatomage Table by documenting usage, (2) evaluate the effectiveness of user guides by reviewing student comments on ease of use, and (3) understand the role of interacting with the Anatomage Table on student learning by examining their reflections on self-perceived value.

Actions. We created optional assignments using the Anatomage Table in two courses required for Movement Science undergraduate students. In Movesci 230 Human Musculoskeletal Anatomy, the Anatomage Table assignment was one of several options that students were required to complete. In Movesci 231, the companion laboratory course, the Anatomage Table assignment was offered as extra credit. Both assignments required students to provide written comments on their experience with the Anatomage Table. In the lecture course, students also provided comments in class on how using the Anatomage Table did or did not contribute to their learning.

Results. In F15-W16, more than half of students in Movesci 230 (123; 66%) and Movesci 231 (82; 57%) elected to complete the Anatomage Table assignments. The number of students completing assignments exceeded the number of reservations made through the library system, confirming our observation that many students interacted with the table in small groups. Only 10% (11 of 110) of students providing in-class comments reported any usability issues with the Anatomage Table. The vast majority of student comments on assignments were positive about using the Anatomage Table to learn anatomy. In particular, students valued the ability to interact with the virtual anatomical models, such as rotating the view, peeling back layers, and “re-doing” a dissection.

Lessons Learned. Assignments using the Anatomage Table were successfully implemented in two undergraduate courses in Movement Science. User guides provided by the Taubman Health Sciences Library were very effective in supporting student use of the Anatomage Table. Student comments about the Anatomage Table were enthusiastic and positive, and suggested that interacting with the Anatomage Table enhanced their learning.

Future Applications and Next Steps. We plan to conduct a study that assesses the effect of interacting with the Anatomage Table on learning in undergraduate anatomy courses. We encourage colleagues across UM to explore the potential of the Anatomage Table and incorporate its use into their courses.

Motivational Interviewing: Assessment of Dental Hygiene Students' Perceptions of Importance in Using and Confidence in Applying

Angela Mills

Abstract: Purpose: Motivational Interviewing (MI) is an evidence-based, patient-centered counseling approach for eliciting behavior change. In 2012, the University of Michigan (U-M) Dental Hygiene Program significantly enhanced their behavior change curriculum by reinforcing and building upon the Motivational Interviewing segment. Purpose: The purpose of this study was to examine students' perceptions of the importance of MI and their confidence in applying it during patient care. Methods: A convenience sample of 22 dental hygiene students receiving the enhanced curriculum from the U-M Class of 2015 participated in this study utilizing a retrospective pre-test/post-test design. Results: A Wilcoxon Signed Rank test was used to compare the differences in average ranks between T1 (Retrospective Pre-Test) and T4 (Post-Test 3) for the importance and confidence questions at each time point for the Class of 2015. Students' perceptions of importance increased with statistical significance in five out of eight MI strategies. Perceptions in confidence increased in seven out of eight strategies. Effect size ranged from .00 to .55. Assessment of qualitative data provided additional insight on student experiences. Conclusion: Class of 2015 student perceptions of importance of using and confidence in applying MI increased in a majority of the strategy categories. Successes with patient health behavior change and challenges with time to integrate this in practice were noted. Research on longitudinal impact and faculty feedback calibration is recommended.

Partnering with Medical School Faculty on Development and Delivery of MOOCs

Stephanie Dascola

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Background

The University of Michigan offers Massive Open Online Courses (MOOCs) in partnership with Coursera and EdX. The Office of Digital Education and Innovation (DEI) is responsible for the development and delivery of MOOCs across the U-M community, and works with faculty who are creating and teaching MOOCs. In the Health System, the Medical School Information Services (MSIS) Learning Design & Publishing team (LDP) collaborates with DEI and faculty from the earliest stages of content creation through the launch and running of courses. Delivering a MOOC can require a substantial commitment from faculty and course teams, and collaboration is central to success.

Actions, Methods, or Intervention

The MOOC process consists of several phases: Scope, Design, Create, Deliver, and Iterate. The DEI team partners with faculty through the scope and ideation phase to align instructor motivation with institutional strategy and school goals.

The DEI and LDP teams then work with faculty through all stages of delivering a course. LDP has expertise in instructional design, video creation, and copyright and permissions management. Team members are particularly involved in three phases: Design, involving instructional design and copyright clearance; Create, including developing quizzes, peer assessments, and other supporting materials, including designing the layout of the course in the Coursera or EdX platforms; and Deliver, initial offering of the course, which includes managing beta testing, providing technical support, and iteration.

Results

To date, the LDP and DEI teams have supported seven Health Science MOOCs in different stages of production: "Cataract Surgery," "Teaching and Assessing Clinical Skills," "Instructional Methods in Health Professions Education," "Sleep: Neurobiology, Medicine," "Society and U.S. Healthcare." Several of these courses have run more than half a dozen times. "Service Transformed: Lessons in U.S. Veteran Centered Care" just completed beta testing and is preparing to launch. "Thoracic Oncology" includes lectures from over 20 different faculty and has had a particularly involved copyright clearance process; the first iteration of the course will launch later this year.

Lessons Learned

- Start with learning outcomes and course goals, and design learning experiences "backwards" from those objectives.
- Plan far in advance of the course launch, and begin the process of requesting permission for copyrighted material as early as possible.
- Avoid ambiguity in assessment questions and discussion forum prompts.
- Partner with faculty to deepen understanding of challenging topics such as copyright, HIPAA compliance, and instructional design best practices.
- Where possible, create content with copyright in mind, using original, public domain, or openly licensed materials in order to avoid the need for copyright clearance and permissions.

Future Applications and Next Steps

- Create additional resources and refine the workflows to improve the collaboration process for course teams and faculty through all stages of MOOC creation and teaching.
- Apply the workflows developed for MOOCs for a range of residential education initiatives including small private online courses, graduate medical education, and flipped classrooms in the new undergraduate medical curriculum.
- Identify opportunities for remix and reuse of content across Health Education fields and develop the appropriate systems and tools to facilitate efficient and effective use.

Improved Clinical Skill Following Novel Pediatric Central Venous Catheter Simulation Curriculum

Waseem Ostwani and Deborah Rooney

Introduction:

Although central venous catheter (CVC) insertions are commonly performed bedside in the pediatric intensive care unit (PICU), the potential for error is high. Because CVC placement is not an ACGME training requirement for pediatric residents (ACGME, 2013), many pediatric critical care medicine fellowship trainees start their training without any formal CVC placement training. In spite of the lack of training requirements, fellow proficiency at CVC placement is required by the ACGME, who recognizes CVC placement as an essential skill for pediatric critical care physicians.

Literature indicates no currently available pediatric CVC placement curriculum that includes optimization of initial training, sustaining learned skills over time, and translation of this training to bedside performance on real patients (Conlon 2013). To address trainees' needs, we developed a novel simulation-based training program for pediatric CVC placement. We evaluated the curriculum's impact on trainees' ability to perform a CVC in a simulated setting, with longitudinal assessment in the PICU to evaluate retention of skills six months' after initial implementation.

Methods:

Curriculum.

Beginning July 2015, all PICU trainees (n=10) participated in the simulation-based curriculum. The trainees consisted of 4 first-year, 3 second-year, and 3 third-year fellows. The curriculum consisted of hands-on, simulation-based training with directed practice by faculty.

Analyses.

The program's impact was evaluated by comparing a number of measures captured at three timepoints— prior to intervention (Pre), immediately following intervention (Post), and following 6 months practice (Refresher). Measures included trainees' a) self-reported confidence (rated on a 5-point scale, with 5 aligning with "very confident"), b) knowledge (21-item MCQ), and c) technical skills (30-item checklist with two 5-point Global ratings). Additionally, trainees' CVC placement competency was assessed for CVC lines in the clinical setting for 6 months following the intervention to evaluate retention of skills and target potential learning gaps.

Trainees' pre- and post-intervention comfort and knowledge scores were compared using paired student t-test. Longitudinal performance ratings and interactions between items and trainees were analyzed using a many-facet Rasch model.

Results:

Prior to intervention, all first-year fellows self-reported their comfort "very uncomfortable," while first/second-year fellows self-reported "very comfortable" at placing a CVC.

Assessment in simulated setting. Following the intervention, junior trainees' comfort increased from 1.0 (Very uncomfortable) to 2.0 (Somewhat Uncomfortable) (p-value incalculable), with no changes for more experienced trainees (Mpre/post=2.40, p>0.05). Knowledge improved for all trainees (Mpre=12.9 Mpost=18.60; t=-7.07, df=13, p<0.01). For all trainees' who completed both pre-post intervention assessments (n=7), Economy ratings improved following simulation-based intervention (Mpre=2.27, Mpost=3.27; t=-3.24, df=6, p<0.05). Similarly, Global ratings also improved following training (Mpre=2.43, Mpost=3.29; (t=-2.52, df=6, p<0.05).

Longitudinal retention in clinical setting. Overall, trainees' performances were rated higher in the clinical setting (Mclinical=2.98) than in simulated setting (Msim=2.68), p<0.001, with no degradation in Economy or Global ratings.

Lessons Learned:

Preliminary findings from this study demonstrated that our simulation-based curriculum was associated with improved pediatric fellows' confidence, knowledge and technical skills associated with central venous catheter placement in our institution's PICU. Although early, this work also demonstrates the value this simulation-based program on trainees' retention of relevant skills.

Next Steps:

More robust evaluation of the novel program will follow its expansion into other relevant clinical areas.

Dental, Hygiene and Graduate Students' and Faculty Perspectives of Hygienists' Professional Role: Does Hygiene Students' Peer Teaching Matter?

Martha Mccomas and Marita Inglehart

BACKGROUND Discussions of how to improve access to dental care for patients from underserved population groups has taken place. The changing role and responsibilities of dental hygienists in the U.S. deserve the attention of dental and dental hygiene educators as the professions attempt to eliminate access to care issues. Assuring all members of the dental team have an understanding of dental hygienists' professional role and scope of practice is crucial in order to provide the best patient care. The objectives of this study were to (a) assess dental hygiene, dental, and graduate students, and faculty members' perceptions of dental hygienists' role, attitudes towards clinical interactions and actual behaviors, (b) to explore attitudes concerning dental hygiene students as peer teachers for dental students, and (c) to compare the role perceptions, attitudes and behavioral intentions of dental students before and after they experienced dental hygiene peer teachers in their preclinical and clinical activities.

METHODS This study consisted of two parts. Part 1 had a correlational design and consisted of baseline assessments of participant's responses before the peer teaching intervention. Part 2 had a "before – after the peer teaching intervention" quasi-experimental design. Data were collected from 57 dental hygiene students, 476 dental students, 28 dental residents, and 67 faculty members. During the second semester of the D1 year the students have one pre-clinical course that consists of two parts: (a) simulation lab, and (b) foundational clinic. Dental hygiene peer teachers were present at all times in both of these settings.

RESULTS/CONCLUSIONS Dental students on average indicated the lowest number of services and indicated the lowest number of patient groups for which dental hygienist can treat. Dental students' attitudes were least positive concerning clinical interactions between hygiene and dental students. Dental students had negative responses concerning whether they could learn from hygiene students and were least likely to perceive benefits of having hygiene students as peer teachers. However, after the D1 students had experienced dental hygiene students as peer teachers during their pre-clinical experiences and clinical settings, their perceptions of the dental hygienists' role, their attitudes towards clinical interactions with dental hygienists, and their perceived benefits concerning dental hygienists as peer teachers improved significantly. They perceived dental hygiene students' peer teaching as helpful, saw hygiene students as knowledgeable, skilled in demonstrating instrumentation, and helpful in answering questions.

LESSONS LEARNED

Peer teachers also gained or increased their current knowledge and experience from this program through self-assessment and reflection. Peer teachers established teamwork amongst interprofessional groups.

FUTURE APPLICATION AND NEXT STEPS

This program did not involve any information about additional responsibilities above and beyond conventional treatments dental hygienists can provide. Future peer teaching efforts should be revised to include information about pain control and additional tasks within the dental hygienists' scope of practice.

Only self reported survey data were collected. Observational data in the clinics will be obtained to assess interactions between dental and hygiene students in general as well as between dental students and hygiene student peer teachers.

Handoffs: What Residents Seek in Safe Transitions of Care

Meredith Barrett, David Turer, David Hughes and Gurjit Sandhu

Background:

Transfer of a patient's care between providers is a significant moment for medical errors. Handoffs are associated with incorrect testing, medication errors, and delayed diagnostics. Nearly 50% of adverse patient events are attributable to communication failures. Given this potential for patient safety breaches we sought to investigate residents' perceptions of handoffs at our institution.

Actions, Methods, or Intervention:

An online survey assessing the effectiveness of handoffs using Likert scoring was completed by 50 of 125 surgical house officers (response rate 40%). Residents also provided free text comments on what they deemed necessary for safe, informative handoffs. Thematic analysis was used to identify critical themes noted by greater than 15% of residents.

Results:

78% of residents reported formal training in handoff delivery. 90% stated they were either "very effective" or "completely effective" at handoffs; however, residents scored 41% of handoffs they received as either "not at all effective" or "only slightly effective". 7 major themes emerged as important for inclusion in handoffs; (i) "recent events" from the previous shift (ii) "follow-up" during the subsequent shift (iii) "overall treatment plan" for the patient moving forward, (iv) "important labs", (v) "patient name", (vi) "code status", and (vii) "current postoperative day". When questioned if they used a tool in order to insure systematic, complete and correct information transfer only 16% of stated they used such an instrument.

Lessons Learned:

Handoffs are a critical patient safety event. Despite training, residents rarely use a tool to relay information. This could be attributed to the belief amongst 90% of residents that they are very effective at delivering handoffs. Despite this confidence in handoff delivery, the same residents perceived nearly half of the handoffs they receive as ineffective.

Future Applications and Next Steps:

The frequency in which handoffs are judged as ineffective amongst residents offers an area for growth and education for our surgical trainees. Constructing an instrument which utilizes the seven key themes identified by most residents may result in enhanced handoffs for patient safety. Additionally, given the overwhelmingly positive assessment of their own handoffs and less favorable judging of handoffs they receive, role play may allow for further critique of the unique handoff dialogue between different resident pairs and potentially rectify this perception bias. In order for full utilization of any formal handoff education or handoff tool, residents must acknowledge they are likely overestimating the efficacy of their handoffs and participation in a handoff curriculum could result in growth for the resident and safety for our patients.

The Collaborative Design of a Leadership 360 Assessment Tool

Heather Wagenschutz, Vinay Guduguntla, Jay Li, Shubhangi Arora and Emily Hogikyan

Background:

More medical schools are developing leadership courses in undergraduate curricula to address the demand for physician leaders who can effectively tackle and manage a rapidly changing healthcare world (Webb et al, 2014). As courses take shape, customizable leadership assessments that adequately target and track specific leadership competencies are needed (Webb et al, 2014).

Methods:

In August 2015 the University of Michigan Medical School (UMMS) launched a required, four-year leadership course which prompted the creation of an assessment tool for the four main leadership competencies: 1) building teams; 2) systems-based practice; 3) influence and communication; 4) problem assessment and problem solving.

The leadership 360 assessment tool underwent three development phases and involved key stakeholders: the leadership course team, the evaluation and assessment (E&A) team, IT Learning team and all first-year medical students (M1). In Phase 1, the leadership course team and E&A constructed a proposed leadership 360 (LDR 360) and had M1s (n=167) provide formative feedback (language, format, usefulness, scale, etc.). In Phase 2, six volunteer M1s discussed and streamlined the M1 feedback themes and made recommendations for tool development. In Phase 3, the E&A and IT Learning teams reviewed the recommendations and decided on a final version of the LDR 360. This LDR 360 was deployed to all M1s in early February.

This study was given exemption status by the University of Michigan Institutional Review Board.

Results:

Ninety-eight percent of M1s provided constructive feedback on the ideal requirements for a leadership 360. Students' submissions mentioned the importance of balancing qualitative and quantitative information, question clarity, and an appropriate assessment scale. Other examples included adding a "Purpose and Directions" section for assessors to read in the beginning and allowing students to reach out to individuals outside of the health system for feedback.

Justification was given to the suggestions, with students stating:

"Some kind of blurb about the way in which the course defines leadership broadly would be helpful here to provide feedback givers with a better sense of what they're reviewing."

"Employ a universal language so that individuals from all backgrounds are able to understand it and provide their thoughts on the medical student."

"An evaluation of leadership only on a numerical scale is vague... added value must be placed on comments and a description of what the student achieved."

"A physician must have the ability to balance her/his work and personal life and that is why it is crucial to get perspectives outside of the medical school."

Lessons Learned

LDR 360 development engaged key stakeholders during a rigorous 4 month process. The LDR 360 gives M1s leadership feedback early in medical training. However, the LDR 360 is only as good as the energy a student puts behind picking assessors, following up on the results, and engaging in reflection. The tool may have limitations by not offering a comparative self-assessment or the ability to follow-up with individual assessors.

Future Applications and Next Steps

- Leadership course evaluation May 2016
- Focus group: Experiences with the LDR 360
- Workshops on how to implement results

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Course Companion eBooks for Group Work

Stephanie Dascola

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Background

The Learning Design & Publishing group (LDP), part of Medical School Information Services (MSIS), partners with Health Sciences faculty to develop classroom tools that enhance the learning environment for students. Group projects are popular with faculty across disciplines, at both the undergraduate and graduate level, to help students learn to work in teams and develop collaboration skills that will be useful in the workplace. However, group work is much less popular among students. One way to improve the student experience of group projects is to promote an atmosphere of team building.

Actions & Methods

LDP is applying our existing expertise with eBook production to design Course Companion eBooks that guide students through team building exercises and facilitate collaborations on group projects.

We are currently piloting this model with the Innovation In Action (IIA) program at the U-M School of Public Health. In the past, IIA used a set of print-based resources to guide students through all aspects of their group projects. Suspecting their resources were underused, the program's instructors explored our methods of creating an interactive eBook solution to highlight collaboration exercises and therefore make it easier for student groups to complete their work.

Using the iBooks Author platform and customizable templates, LDP produces interactive eBooks using instructor-provided content and interactive widgets from a vendor. We are conducting focus groups with past program participants to gather feedback about the usefulness of the interactive eBook and ask for input about features that students want. After the focus groups, we will create an interactive teamwork companion eBook for use during the 2016-2017 Innovation in Action program.

Results

Our overall objective is to evaluate the use and effectiveness of this teamwork eBook by comparing overall student deliverables to previous courses, gather feedback from students on their feelings of individual project ownership, common goals, communication style, and influence. We will conduct focus groups with students later this month, and will have results to report by HPE Day.

Lessons Learned

When doing group work, students often focus on the project assignment and not on strategies for working successfully as a team. There is a need for tools and resources that scaffold effective collaboration among students. We anticipate that providing an eBook to facilitate team building will result in stronger classroom deliverables, closer teammates bonds, and more effective collaboration, which will be reflected on course evaluations and in exit interviews with students.

Future Applications and Next Steps

Outcomes of the pilot project with Innovation in Action will guide the rollout of customized team-building eBooks as a service available to faculty whose courses have significant group work components. A future application of this model may be to design similar tools for distance-learning and online classes.

MICHR Distinguished Clinical and Translational Research Mentor Award, 2012 - 2016

Christy Byks-Jazayeri, Elizabeth W. Anderson and Vicki Ellingrod

Abstract:

1. MICHR Distinguished Clinical and Translational Research Mentor Award, 2012 - 2016
Christy Byks-Jazayeri, MFA, Elizabeth W. Anderson, MPH, Vicki Ellingrod PharmD, Michigan Institute for Clinical and Health Research (MICHR), University of Michigan
2. Background: Mentoring affects both the training and research productivity of mentees (Pfund et al, "The Merits of Training Mentors"). In 2011, MICHR faculty created the annual Mentor Award to both celebrate and heighten the importance of mentoring in tenure and promotion packages.
3. Methods: Four competencies were selected from the literature (Abedin et al, "Deriving Competencies for Mentors of Clinical and Translational Scholars") and nominators were asked to address these thematic areas: Psychosocial Support, Communication and Relationship Management, Career and Professional Development, and Research Development. Reviewers scored nomination packets based on the extent nominees embodied each competency. In 2015 Awardees completed a short survey about the Awards' impact.
4. Results: Since 2011, 99 nominations have been received representing 11 schools/colleges. One-third of nominees are female. Thirty awards have been given, representing 9 schools/colleges, and 50% of awardees are female. When Awardees were surveyed, respondents reflected that the Award was included in a performance evaluation and resulted in verbal or written congratulations. Most added it to their vitae.
5. Lessons Learned: Reviewers found most nominees worthy of the Award. Because of the holistic review approach, other elements were taken into account (gender, discipline, academic background, multi- or cross-disciplinary mentoring) to help ensure a spectrum of representation from across the University. Interest for this award is growing and units on campus have added official sections on mentoring in promotions and tenure package since creation of this award.
6. Next Steps: MICHR will continue to promote the value of mentoring. It will also seek to leverage relationships across campus to find and recognize clinical and translational mentors from across the disciplinary and translational (T1-T4) spectrum. In conjunction with other units on campus, MICHR will also start to offer mentoring training and development workshops for early career researchers.

Well-Being, Resilience, and Academic Performance of Medical Students

Meg Wolff, Joel Purkiss, R Brent Stansfield, Helen Morgan, Michelle Daniel, Gurjit Sandhu, Seetha Monrad, Paula Ross, Tamara Gay, Amy Tschirhart, Jun Yang, Patricia B. Mullan and Sally Santen

Background: The focus on medical student wellness has risen in recent years following increased recognition that many students experience psychological distress.^{1,2} An exposure-response relationship exists between levels of distress and risk of severe consequences such as suicidal ideation and dropping out of school.³ Resiliency may protect against distress.⁴ The effects of distress and resiliency on academic performance in medical school are unknown. The purpose of this study was to determine whether distress levels and resiliency are associated with academic performance.

Methods: Our study included two cohorts of M2 students (n=254, 74% participation rate) and one cohort of M3 students (n=92, 54% participation rate). Medical student well-being was measured using the Medical Student Well-Being Index (MSWBI), consisting of seven questions.³ Resiliency was measured using Connor-Davidson.⁵ Preclinical academic performance was measured using a weighted cumulation of M2 sequence scores, and clinical academic performance was measured using a weighted cumulation of M3 required clerkship grades. Pearson correlations were used to examine association between well-being, resiliency, and academic performance.

Results: Among preclinical students, there was a small but statistically-significant association between M2 cumulative and well-Being (R=0.235, p<0.001); there was no association with Resiliency. There was a small but statistically-significant association between M3 clinical cumulative and MSWBI score (R=0.265, p=0.011.); for the correlation with resilience (r = .20, p=.056). Finally, we noted small but statistically-significant correlations between MSWBI and resiliency measures taken at both the preclinical (R=0.229, p<0.001) and clinical (R=0.253, p<0.001) stages.

Conclusions and Next Steps: There were small, statistically-significant associations between well-being and academic performance among both preclinical and clinical medical students. These outcomes underscore the potential impact of well-being and the importance of promoting it among medical students.

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Medical Student Professional Behavior and Self-Regulation: Review of Honor Council Cases at the University of Michigan

Jeremy Baruch, Sally Santen, Rajesh Mangrulkar, Tyler Menge, Kennedth Hayes and Paula Ross

Background: Honor Councils (HC) have a critical role in the development of medical student professionalism and self-regulation. Currently, little is known about the purview and process of cases reported to medical school honor councils. For this study, we explore the topics of honor code violations that are reported to the honor council at the University of Michigan Medical School (UMMS).

Actions, Methods: UMMS Honor Council minutes from October 2012 - January 2016 were reviewed to extract the number and categories of cases (1) formally reported to HC through official mechanisms, (2) cases confirmed by HC forwarded to administrative mechanisms for confirming violation and (3) processing the violation through sanctions

Results: For the past 4 years, a total of 10 incidents were reported to the Honor Council; 5 related to professionalism and 5 related to academic integrity. Of the professionalism cases, 2 were determined to be unsubstantiated, and 3 were confirmed and forwarded to the administration. Regarding academic integrity investigations, 3 were unsubstantiated and dismissed, and 2 were confirmed and forwarded to the administration.

Lessons Learned: While Honor Councils are often perceived as addressing academic dishonesty, from the data gathered at UMMS, it is clear that there is almost equal attention dedicated to issues of student professionalism. An equal number of cases were found to be unsubstantiated as were forwarded to Academic Hearing, indicating that the Council gives careful consideration to each investigation. As the cases that were forwarded to academic hearing were confirmed, the recommendations of the Council are taken seriously by the administration.

Next Steps: Further research to elucidate broader trends in honor council activity by engaging other schools in this inquiry is currently underway.

Personal and Institutional Components of the Medical School Educational Environment

Larry Gruppen and Brent Stansfield

Purpose. This study uses a systems framework to examine the relative influence of individual-level and institution-level factors on student perceptions of the medical school educational environment.

Method. A series of hierarchical linear models were fit to a large, multi-school longitudinal dataset of student perceptions of the educational environment, various demographics, and student empathy, tolerance of ambiguity, coping, and patient-provider orientation. Separate models were evaluated for individual-level factors alone, institution-level factors alone, and the combination of individual- and institution-level factors.

Results. The individual-level model accounted for 56.7% of the variance in student perceptions of the educational environment. However, few specific variables at the individual level had noteworthy direct effects on these perceptions. Similarly, the institution-level model accounted for 10.3% of the variance in student perceptions, but the specific characteristics of the institution explained little of this impact. The combined individual- and institution-level model attributed 45.5% of the variance in student perceptions to individual-level factors and 10.8% to institution-level factors. Again, specific variables explained little of this impact.

Conclusions. Our findings indicate that the impact of individual-level factors on perceptions of the educational environment is about 4 times greater than institution-level factors. This contrast in impact reflects the fact that the educational environment is defined through a learner, not institutional lens. Nonetheless, institutions vary in learner perceptions of their environments and these differences may provide some support for institutional initiatives to improve the educational environment. More broadly, these results evidence the complexity of the educational environment, both in defining it and in understanding its dynamics.

Poster # 504

Small World at UMMS

Elliott Brannon, Robert Cesaro, Xing Dong Chen, Whit Froelich, Patrick Li

Background

Small World is a student organization at UMMS which aims to make large communities smaller by facilitating one-on-one connections within the community. It was started by a medical student at the University of Michigan in October, 2015 who felt overwhelmed by the prospects of finding friends among his 170 classmates. Over five months, Small World has set up over 500 pairings between students. The idea of Small World is simple: randomly pair individuals from a large group to facilitate one-on-one connections.

Intervention

One week after the conception of Small World, over half of the first year class at the University of Michigan Medical School had signed up and participation has only increased through the remainder of the academic year. Students are randomly paired and pairs are emailed every other week. The pairs have two weeks to figure out a time to meet before they are assigned their next Small World partner. Software was developed to automatically pair and email students and ensures that no pairing is repeated.

Results

Most Small World connections have happened over lunch or coffee in the medical school, but connections have inspired everything from baking sessions to discussions of the meaning of life. From a survey we recently conducted, 100% of the participants have enjoyed the connections. A few of the comments from a recent survey are below: "I've met with several people I hadn't yet talked to or connected with. This has given me a great opportunity to get to know more of my classmates, especially ones who are in a different social circle. I've really enjoyed [Small World]!"

"I got to connect with fellow classmates and learn more about them in a more organic way than a traditional orientation-esque ice breaker. I also was able to exchange advice about school, research, and extracurricular activities." "I've been able to chat at length with classmates instead of just in passing. Also, I've been paired with some great people that otherwise I wouldn't have socialized with. It's been a great experience!"

Lessons Learned

With a class of approximately 170 members, students need an excuse to talk to one another. Small World provides that opportunity in a low-stress context with minimal commitment. Increasing the number of connections each student has will lead to increases in all of the following: the knowledge of resources available to her/him, happiness and resiliency, and the professional connections for future work and research [1, 2].

Next Steps

Small World may work well for many different communities and we are exploring opportunities to expand to other groups of students and also groups of physicians. Although Small World was entirely developed by students, the possibility of integrating Small World into the medical school curriculum is currently being explored.

[1] Davis, T. S. (2014). Social Connection in the Science of Happiness. Greater Good Science Center.

[2] Kroenke, Candyce H. et al. Social Networks, Social Support, and Survival After Breast Cancer Diagnosis. J Clin Oncol. 2006 Mar 1;24(7):1105-11.

Introducing Mindfulness-Based Stress Reduction: An interdisciplinary Partnership in Curriculum Design

Davoren Chick Md and Elizabeth Robinson Phd Msw

Background and Purpose: Stress, depression, and burnout are highly prevalent in the health professions. Psychosocial stress also contributes to suffering for clinical patients. Mindfulness-based stress reduction (MBSR) practices have been demonstrated to reduce symptoms of burnout and depression in health professionals, and to reduce suffering in patients. Therefore, we partnered as interdisciplinary professionals to develop a curriculum introducing MBSR to health professionals and raising awareness of MBSR as a tool supporting wellness and reducing suffering.

Intervention: We created a blended curriculum comprising faculty development, interactive online learning, and a small group experience:

1. A live faculty development session (Powerpoint presentation with integrated mindfulness exercises and discussion, 2 hours) provides faculty with awareness of and experience with MBSR practices, and prepares them to discuss this topic with students.
2. An online interactive video (<http://coding101.net/mindfulness/story.html>, 30 minutes) provides students with foundational information and introductory MBSR practices.
3. Small group sessions of faculty and students (1 hour) then meet to discuss the basics of professional burnout, debrief the interactive video experience, engage in a guided group meditation, and discuss options for informal mindfulness practices in daily lives.

Results: Twenty six of 32 invited medical school faculty participated in the faculty development session. 25 rated the session positively; 1 rated the session negatively. On a Likert scale (5 = best, 1 = worst), applicability and value for the faculty development intervention were rated positively to highly positively (average Likert score; N agree or strongly agree/N neutral/N disagree or strongly disagree):

- "This session was useful to me personally" (4.04; 24/1/1)
- ""This session was useful to me in my role as a clinician" (4.08; 23/3/0)
- ""This session was useful to me in my role as an educator"" (4.04; 22/3/1)
- "I would recommend this session for other clinical faculty" (4.08; 21/5/0)
- Positive comments included: "Information on technique and background was useful", "May be useful for hospitalized patients with somatic symptom disorder", "Can see it being useful for residents and students", "Excellent!"
- Critical feedback was received from one participant: ""It's a tool that I don't feel I have any need for." Preliminary feedback related to the interactive video has been highly positive. Feedback is pending from the small group sessions.

Lessons Learned: Faculty are receptive to learning about MBSR and appreciate this content for their roles as clinicians, educators, and individuals. Non-physician expertise was essential to selection of the curricular content and delivery of the faculty development session, and faculty were receptive to our interdisciplinary partnership. An interactive online video was well received in providing foundational knowledge and stimulating engagement with students, and it was possible to provide simple meditative and reflective experiences through an interactive video format.

Future Applications and Next Steps: Small group discussion sessions will be completed prior to Health Professions Education Day, with final feedback. After revisions based on feedback, we will have produced a portable curriculum including sharable online learning and guided meditation tools, appropriate for dissemination throughout the health professions.

The Influence of MCAT and GPA Preadmission Academic Metrics on Interview Scores

Steven Gay, Sally Santen, Rajesh Mangrulkar, Thomas Sisson, Paula Ross and Nikki Zaidi

Background:

The admissions interview is used to assess nonacademic characteristics by eliciting information about an applicant that is not easily discerned or verified through other aspects of the admissions process. However, interview scores are often biased by factors unrelated to the nonacademic characteristics of interest (Griffin & Wilson, 2010). Academic metrics have been shown to influence interviewers' assessment of applicants' nonacademic characteristics (Elam et al., 1991; Shaw et al., 1995). While studies suggest that academic metrics account for significant variance in interview scores, these studies were conducted two decades ago (Elam et al., 1991; Shaw et al., 1995), and this type of study has not been replicated since the introduction of the AAMC Advancing Holistic Review Initiative.

Actions, Methods, or Intervention:

At the University of Michigan Medical School (UMMS), we were concerned about the weight of the relative importance of applicants' undergraduate grade point averages (uGPAs) and Medical College Admission Test (MCAT) scores by our interviewers. To examine whether uGPA and MCAT scores significantly influenced interview scores, we removed these metrics from our admissions interviewers' files in 2013. We hypothesized that withholding these metrics from our interviewers' files would allow for a more balanced assessment process and a greater adherence to holistic methods of evaluation. This study examined academic and demographic predictors of interview scores for two applicant cohorts at the UMMS. In 2012, interviewers were provided applicants' uGPA and MCAT scores; in 2013, these academic metrics were withheld from interviewers' files. Hierarchical regression analysis was conducted to examine the influence of academic and demographic variables on overall interview scores for both cohorts.

Results:

When interviewers were provided uGPA and MCAT scores, academic metrics explained more variation in interview scores (9.7%) than when interviewers were blinded to these metrics (3%). Further analysis showed that the interaction between cohort and MCAT score was positive and statistically significant, indicating that the association between MCAT scores and interview scores was significantly stronger for the 2012 unblinded cohort compared to the 2013 blinded cohort ($\beta = .79, P < .05$). By contrast, uGPA had no main or interactive effects on interviewer scores.

Lessons Learned:

The results of our study suggest that interviewers' access to academic metrics influenced their interview scores. uGPA accounted for some variation in interview scores for both cohorts, but only MCAT scores significantly influenced interviewers' scores. Therefore, MCAT scores should be withheld from interviewers because interviewers should assess nonacademic characteristics independently from academic metrics. Blinding interviewers to academic metrics has the potential for a more holistic face-to-face evaluation of an applicant.

Future Application and Next Steps:

As we strive for equipoise in our holistic review, we must continue to examine various components of our admissions process. Future studies will examine other components of our revised interview and application process.

Creating Meaningful Partnerships with Community Colleges to Address the Leaky

Laronda Chastang, Clarissa Love and Patricia Andreski

Diversity in the health professions is paramount to the nation's need to eliminate health disparities. This includes addressing the quality and availability of health care for underserved populations. "Increasing racial and ethnic diversity among health professionals is important because evidence indicates that among other benefits, it is associated with improved access to health care for racial and ethnic minority patients, greater patient choice and satisfaction, and better educational experiences for health professions students. According to the American Association of Medical College (AAMC) in 2012, about one third of medical school applicants attended a community college either during high school, after high school, or following graduation from a four year university. Data show that a high portion of minority medical students attended Community College before Medical School: about 34% of Latino, 28% of African American, and 27% of Asian medical school graduates attended community college at some point, compared to 27% of whites. Minority students who first attend community colleges were more likely to practice in underserved communities, compared to students who used other pathways. We believe that creating a diverse health profession pipeline begins at the community level. As a result, the Office for Health Equity and Inclusion (OHEI) developed an eight week fellowship for community college faculty. This pilot project used infographics to dispel myths, educate faculty on social determinants and health disparity research, addressed implicit bias, and applied adult learning practices to guide daily reflection. This process produced faculty with increased knowledge of health disparities and improved skills to mentor and prepare students from underrepresented groups to pursue health professions. The experience gained from the fellowship have resulted in important information dissemination regarding the significance of community college partnership in addressing the leaky pipeline into health professions and may have translational and policy implications.

Assessing Sociocultural Attitudes Among First-Year Medical Students to Enhance Cultural Competence Amongst Mentors

Emily Flagler, Lauren Phillips, Elizabeth Yates, Jonathan Finks Md, Paula Ross Phd and Gurjit Sandhu Phd

Background:

Doctors of Tomorrow (DOT) is a University of Michigan Medical School and Cass Technical High School academic partnership designed to increase inclusion of communities underrepresented in medicine (UiM). A key aspect of programming includes individual medical student mentorship. First-year medical students (M1) engage primarily as mentors to 9th grade students. The racial and ethnic background of these medical students varies significantly from their paired high school mentees. Assessing baseline sociocultural attitudes of medical students will inform curriculum to enhance cultural competence amongst mentors.

Methods:

The "Student Attitudes Survey", which has previously shown favorable validity evidence, was administered to the entire M1 class (n=170). The survey consists of 27 statements covering topics such as race, ethnicity, and sexual orientation. Responses were coded by a numerical system assigning values of 1 to 5 corresponding with Very Uncomfortable to Very Comfortable, respectively.

Results:

The survey response rate was 56% (95/170). A majority of students (82%) reported feeling comfortable discussing race and ethnicity among their friends, but only 61% felt comfortable having this discussion in class. There was a statistically significant difference in how an individual student responded to each of these two questions. (p=0.000). Nearly all students (98%) reported feeling comfortable working with individuals of different sexual orientations. Of 93 students, 65% felt comfortable examining a patient with HIV.

Lessons Learned

Medical students report greater comfort levels on topics of sexual orientation compared to race and ethnicity. Additionally, students felt less comfortable discussing race and ethnicity in the classroom setting as opposed to an informal setting with friends. Topics such as unconscious bias, communication, compassion fatigue, teamwork and collaboration were identified as areas that should be emphasized and formally coached in the mentor curriculum for medical students.

Future Application/Next Steps:

When planning future curriculum, students' comfort with publicly engaging race and ethnicity should be explored further. Mentor curriculum that addresses areas of discomfort has the potential to enhance sociocultural competencies are needed to optimally support students who are underrepresented in medicine. If these topics are implemented, we project more medical students will feel comfortable discussing race and ethnicity in a formal educational setting to raise their level of cultural competency.

Staying on the Pre-Med Career Path: A Qualitative Study of Underrepresented Minority and First-Generation Undergraduate Pre-Med Students

Adrienne Haggins, Ebony White, Lynnette Wynn, Paula Ross and Helen Morgan

Background: African-American, Latino, and Native American students continue to be underrepresented in medicine, dentistry, nursing, veterinary, and biomedical sciences, despite national and local institutional efforts to shift the demographics in these fields. The undergraduate education period can be a critical access point for students, particularly those that are at high risk for attrition. Undergraduate underrepresented minority students' interest in medical and science careers is more likely to decrease over time, and they apply to medical school at lower rates than their non-underrepresented minority counterparts. In addition, first-generation students enroll and graduate from college at lower rates than their counterparts. Low-income, first generation students are more likely to be ethnic and racial minorities, and have inferior pre-college academic preparation. Our objective was to explore the formal and informal experiences of underrepresented minorities and first generation students at the University of Michigan and how their experiences and identity influence their persistence in the pre-med career path.

Methods: Using semi-structured interviews we elicited medical students and pre-med students at the University of Michigan perceptions of their undergraduate experiences with formal and informal resources. We explored their experiences with course work, academic advising, research, mentorship, student organizations, peer mentors, etc. We also examined how their experiences affected their interest, motivation, and confidence in pursuing the medical career path.

Interviews were conducted from November 2015 to April 2016. Each interview was audiotaped, transcribed, and analyzed using systematic and iterative coding methods. Demographic data such as age, gender, race, ethnicity, year in school, major, socioeconomic and first-generation status were collected for all participants.

Results: Five medical students and 21 pre-med students (90% Ann Arbor and 10% Dearborn campus) were interviewed.

Medical and pre-med students indicated that their persistence to pursue pre-med was related to positive interactions with peers and their research mentors/advisors, and informative shadowing experiences.

Students reported strategies for success that reflected proactive help-seeking behaviors, tenacity/resilience, and intrinsic motivation related to having a clear vision/insight into why they felt a career in medicine was an appropriate fit.

Students attributed their feelings of discouragement to experiences with rigid/negative/authoritarian advisors, difficulty obtaining shadowing or research opportunities, or poor performance in pre-med courses.

Note, plan to include excerpts in poster.

Lessons Learned: Developing a better understanding for collegiate learning environment of can illuminate factors influencing persistence for students interested in pre-med careers. Factors that influence underrepresented minority and first generation student achievement at University of Michigan can inform undergraduate curriculum and interventions that promote inclusion and success for students interested in medical careers.

Future Applications and Next Steps: Developing a better understanding of underrepresented minority and first generation students' pre-health undergraduate experience will be essential to developing tailored interventions to enhance pre-health preparation for groups that are vulnerable to attrition within the medical career path.

Premedical Undergraduate Students Rank Live Tissue Experience as Highly Educational and Highly Engaging

Krystin Carlson

Background: Undergraduate students are using simulation software more often in their biology labs to experience research and generate results from experiments. These simulations often capture the key outcome of an experiment, but the nuisances of research problems and solutions may be lost to students during this experience.

Methods: Following working with live tissues during a frog cardiac contraction lab in an Animal Physiology Lab course at the University of Michigan, students ($n = 30$) anonymously completed surveys. The questionnaire explored engagement and learning of students for work with live tissues and an imagined simulation. Student's career goals, and opinions about simulations as well as live tissue experiments were documented. Data was analyzed in R 3.1.0.

Results: It was found that students ranked their learning and their engagement levels to both be significantly higher under the condition of working with live tissues (Wilcoxon signed ranks $P < 9 \times 10^{-5}$ and 2×10^{-6} , respectively). Average learning rankings (from a scale of 1 as "very low" to 5 as "very high") were 4.0 with live tissue and 3.3 with computer simulations; average engagement rankings (also scaled 1 to 5) were 4.6 with live tissue and 2.5 with a simulation. The majority of students claimed that what they found most educational (80 % of students) and engaging (90 % of students) during the lab exploring frog cardiac contractility could not be captured through any simulation. Many students described trouble shooting with equipment and data, which occurs during live lab work, to be essential to learning the research process.

Lessons Learned: Undergraduate students heading toward careers in medical/dental school, graduate school, or research laboratories have a lot to gain through working with live tissues. Students described their experience during this time as exciting, memorable, and challenging. They listed that computer simulations could not capture the real pressure to preform a dissection or equipment calibrations. They stated that their interest in biology and laboratory work was influenced by this live-tissue lab and it increased their curiosity of frog anatomy and the challenge of research projects with multiple variables.

Future Applications and Next Steps: This project highlights the essential experience of working with live tissues during an experiment for undergraduates pursuing graduate and medical school experiences. It gives areas for computer simulations to improve, allowing students to struggle with equipment and calibrations. Future studies directly comparing students who have had first-hand experience with a specific cardiac lab simulation would be a future project to better compare students with first-hand experiences in each. Many students discussed that both methods of learning would contribute to great educational experiences, but they named the challenge and memorability of working with the live-tissues as superior. Work towards increasing undergraduate students experience with live-tissues is essential to their experiencing the true factors of research and having a handle on real issues that may emerge in the literature as students work to interpret scientific findings.

He, She, They and Zie: Patient-Centered Care for Transgender Adolescents

Lauren Ranalli, Jenni Lane, Vani Patterson and Margaret Riley

Background: Healthcare providers are in a unique position to promote health and positive outcomes for transgender and gender non-conforming youth. However, this vulnerable population has experienced high degrees of marginalization and has often felt unwelcome in traditional medical settings. Research shows that only 30-40% of transgender individuals are receiving regular medical care. At the same time, transgender adolescents are at higher adverse risk of HIV, other sexually transmitted diseases, substance use, depression, and suicide. In a collaborative effort to transform the healthcare environment, the UMHS Adolescent Health Initiative (AHI) partnered with representatives from the U of M Schools of Medicine and Social Work to create an innovative train-the-trainer workshop entitled He, She, They and Zie: Patient-Centered Care for Transgender Adolescents.

Intervention: This 2-hour workshop is a two-tiered, train-the-trainer model in which 2-4 champion providers and/or staff members receive training and coaching on terminology, gender identity, and best practices to improve patient-centered care for transgender adolescents. Attendees also receive training and materials to facilitate a 30-minute “Spark” mini-training within their own clinic on providing culturally competent healthcare for transgender adolescents.

Results: AHI has hosted two workshops to date, reaching 89 champion trainers representing 25 UMHS sites and departments including Behavioral Health Consultant Michigan Child Collaborative Care Program (MC3), Child Behavioral Health/ Weight Management Center, Child Protection Team, Comprehensive Gender Services, Disorders of Sex Development (Mott), Division of Adolescent Medicine, Emergency Medicine, Family Medicine, Inpatient Child & Adolescent Psychiatry, Michigan Congenital Heart Center, Obstetrics and Gynecology, Patient and Family Centered Care, Pediatrics, Pediatric Cardiology, Pediatric Endocrinology, Pediatric Rehabilitation, Pediatric Rheumatology, Pediatric Urology, Psychiatric Emergency Service, Regional Alliance for Healthy Schools, Urology, and the U of M Schools of Medicine, Nursing, and Social Work.

The impact of this innovative train-the-trainer workshop has also reached beyond U of M and included champion trainers from Spectrum Health, St. Joseph, IHA, Henry Ford, and St. Mary. Champion teams have facilitated their Spark mini-trainings with approximately 330 additional providers, health center staff, and other health professionals across multiple institutions. Evaluations results from those Spark trainings will be available in late spring 2016.

Lessons Learned: AHI has received very positive feedback from workshop attendees. This low-cost, high impact model is an effective way to engage multidisciplinary health professionals and positively influence the health system and university culture and practices around care for transgender patients.

Future Applications and Next Steps: AHI will repeat this workshop with attendees from around the country at the annual Conference on Adolescent Health on April 18th, 2016. AHI’s Medical Director is currently working with the U of M Medical School to adopt this training as part of the curriculum for first year medical students. AHI staff have been actively involved with the MiChart team to pilot new transgender-inclusive medical forms, including preferred pronouns, gender identity, and additional medical information. Henry Ford Health System, St. Mary Mercy/St. Joseph/IHA, and Helen DeVos Children’s Hospital have all expressed interest in implementing similar EHR modifications as a result of their participation in the training.

Pediatric resident and patient-education librarian collaborative initiative to create disease-specific and patient-centered instructions

Margeaux Naughton Md, Stephanie Booms Md, Priyanka Rao Md, Ruti Volk Msi Ahip, Kelly Orringer Md and Heather Burrows Md Phd

Background: One of the imperatives of patient-centered care is quality patient-education tools. Patient-centered, disease-specific education materials can improve patient and parental knowledge and understanding of disease. There is no shortage of educational materials available, but selection and utilization of them can be challenging. One study showed that if physicians had a small repertoire of familiar educational materials, they were more likely to use and distribute them to patients. Our objective was to teach residents to create easy-to-use patient-centered and disease-specific patient education materials to improve patient and parental understanding of their disease and improve care following outpatient pediatric clinic visits.

Methods: The University of Michigan Pediatric Residency Program has resident quality improvement (QI) groups that meet monthly. Residents in the outpatient QI group saw the need for improvement in the quality of patient instructions after outpatient clinic visits. Residents surveyed peers and faculty and compiled a list of high yield topics for patient education. To improve the quality of handouts created, particularly in the areas of readability and content efficacy, we collaborated with a patient-education librarian. Residents underwent training using both the MLearning module UMHS-52601 "Writing patient-centered educational materials using plain language guidelines"" and an in-person training session with patient-education librarian, Ruti Volk. Residents then created patient-centered handouts with the help of faculty mentors and the patient-education librarian. These were formatted for the electronic health record and uploaded to the Patient Education Clearinghouse. To promote use of these materials, we educated resident peers about components of a good After Visit Summary and how to use the handouts. We created a video walking viewers through the utilization process using Camtasia software. We hung a poster in each resident clinic office as a visual reminder of the handout topics.

Results: Qualitative resident and faculty feedback thus far has been positive. To date, residents have created and uploaded 15 patient education handouts over 18 months. Over 12 general pediatric residents and 6 general pediatric faculty have been involved in the creation of these materials. Resident physicians and faculty members now use these handouts in the outpatient clinics.

Lessons Learned: Teaching residents to create and use the materials themselves helps residents to learn what constitutes readable and effective patient-education materials. It also teaches residents how to take these created materials and use them in their clinical practice. This process engendered a collaborative effort between resident physicians, pediatric faculty, and a patient-education librarian. Once familiar with the resources available, such as the Patient Education Clearinghouse and librarian expertise, residents have continued to create and use instructions and educational materials.

Future Applications: Future aims include assessing utilization and quality of the created handouts. We also aim to translate our handouts into other languages common to our patient population (Chinese, Korean, Spanish, Japanese, Arabic, etc). We will continue to solicit new handouts based on resident and faculty perceived need.

LGBT Coverage in Dental Schools and Dental Hygiene Programs: Results of a National Survey

Marita Inglehart, Kenneth Hillenburg, Carol Anne Murdoch-Kinch, Janet Kinney and Henry Temple

BACKGROUND: One central objective of dental and dental hygiene education is to educate future dentists and hygienists in such a way that they can provide the best possible care for all patients. The purpose of this study was to assess curricular efforts of U.S. dental schools and hygiene programs concerning oral health-related treatment needs of lesbian, gay, bisexual and transgender (LGBT) patients. Specifically, the number of hours of LGBT content in required and elective settings was determined, how this content is taught and which pedagogy is used, which specific LGBT content is covered and whether deans and program directors believe that this coverage is not needed, adequate or that more coverage is needed, and how the institutions assess learning outcomes in this area. In addition, it was explored which strategies might be successful in increasing LGBT-specific content at their institution.

METHODS: Data were collected from 32 academic deans in dental schools in the U.S. (Response rate: 49%) and Canada (N=2; Response rate: 20%) and 71 directors of dental hygiene programs in the U.S. (23%). All but 3 of the U.S. dental school responses were submitted on a web-site. Three responses were returned as paper-pencil surveys.

RESULTS: Twenty-nine percent of dental schools and 48% of hygiene programs did not cover LGBT content. Dental schools dedicated on average 3.68 hours and hygiene programs 1.25 hours in required settings and 2.06/0.78 hours respectively in elective settings to LGBT content. The pedagogy consisted mostly of lectures (dental schools:68% / hygiene programs:45%) and small group instruction (43%/25%). Most programs covered the topics of HIV in LGBT people (85%/53%), oral health disease risk for LGBT populations (63%/54%), barriers to accessing health care for LGBT people (58%/38%) and chronic disease risk for LGBT populations. Very few programs covered safer sex for LGBT people (14%/25%) and sex reassignment surgery (14%/11%). Up to a third of the respondents did not believe that coverage was needed for such topics as sexual orientation (21%/32%), coming out (29%/37%), transitioning (29%/38%) and sex reassignment surgery (32%/35%). Learning outcomes were mostly assessed with written examinations (41%/30%) and faculty-observed patient interactions (21%/23%). 20% of dental schools and 33% of hygiene programs did not report any assessment of LGBT-content outcomes. The most frequently endorsed strategies for increasing LGBT-specific content at their institution were receiving curricular material focusing on LGBT-related health/health disparities (74%/55%) and having faculty willing and able to teach LGBT-related curricular content.

LESSONS LEARNED: In conclusion, providing the best possible care for LGBT people and their families requires that dentists and dental hygienists are educated about the health-related issues these patients face. These data showed that increased educational didactic and esp. clinical efforts are needed. Continuing education efforts and faculty development programs are needed as well.

FUTURE APPLICATION AND NEXT STEPS: Based on these findings, the decision was made to develop an LGBT content inclusive curriculum for dental and dental hygiene programs, to engage faculty in developmental workshops in this context and to create resources that can serve as the basis for developing lesson plans.

Lessons in Medication Adherence

Jennifer Stojan, Jason Kahn, Stacie Buckler and Meg Wolff

Background: Medication nonadherence is a pervasive issue in health care that contributes to poor outcomes. In spite of this, physicians often don't ask patients about medication adherence, believe it is the patient's responsibility for being adherent, and become deeply frustrated when patients are not adherent. To appropriately counsel patients, physicians must appreciate the barriers to adherence rather than assign blame, recognizing that adherence is influenced by individual, social and environmental factors. This study sought to determine if an educational exercise designed to heighten awareness of the patient experience could change a medical student's attitudes regarding medication adherence.

Intervention: One hundred and sixty seven first year medical students enrolled in a course teaching history taking, physical exam skills, clinical reasoning and socio-behavioral issues in medicine participated in an exercise designed to demonstrate some of the challenges a patient may encounter when taking a prescription. Each student received a mock prescription for a medication with instructions to take it four times daily for 7 days. The "pharmacist" dispensed the medication (Tic Tac® mints) and was only available during business hours. After the activity, students and faculty participated in a debriefing session focused on the experience and medication nonadherence. Students completed a 9 item survey designed to assess the primary outcome of change in knowledge and attitudes surrounding medication nonadherence before and after the activity. Responses were graded on a 5 point Likert scale (1 = strongly disagree and 5 = strongly agree).

Results: 154 students completed the survey. Prior to the exercise, students rated their understanding of the meaning of the word noncompliance as a 4.2 and their perception of it as being a derogatory term as 3.1. Following the exercise they rated their understanding as a 4.6 (p-value <.0001) and 3.5 (p-value <.0001) respectively. There was a difference in the ratings of student attitudes about the acceptability of labeling a patient as noncompliant before and after the exercise (2.7 vs 3.0 p-value <.0001). There were also statistically significant differences in student attitudes before and after the exercise when asked if patients should be able to follow medication instructions as prescribed (1.9 vs 2.3, p-value <.0001), remember to take medications as prescribed (2.3 vs 2.7, p-value <.0001), be able to take a medication multiple times a day (2.0 vs 2.4, p-value <.0001), and get prescriptions filled in a timely manner (4.2 vs 4.5, p-value <.0001).

Lessons Learned: After the exercise, students' understanding of the challenges that patients face in taking medications as prescribed increased from a mean of 3.8 to 4.4 (p-value <.0001). These results suggest that participating in an active learning exercise simulating medication adherence can change the attitudes of medical students regarding nonadherence and improve their recognition of the myriad of barriers to medication adherence.

Future Applications: Future iterations of the exercise could include a wider variety of prescription instructions, including the "pharmacy" denying a medication due to insurance coverage. There is also the opportunity to collaborate with other health professions regarding their role in patient care and medication adherence.

Complex Care: A Qualitative Study of Emergency Medicine Residents Experiences Caring for Diverse Populations and Understanding of Health Disparities

Michael Clery, Emily Hogikyan, Josiah Smiley, Laura Hopson and Adrienne Haggins

Background:

Emergency Medicine physicians work in clinical environments where they are likely to encounter patients from a broad and unpredictable range of racial, cultural, religious, sexual orientation and socioeconomic backgrounds. This presents a complex challenge for providers to learn to adapt to diverse populations and provide culturally sensitive care. Exposure to international disparate clinical sites and patient populations has been shown to positively influence cultural competency skills. The inability to be sensitive to the needs of diverse populations has been attributed to adverse effects on patient adherence and health outcomes. Recently adopted Accreditation Council for Graduate Medical Education (ACGME) milestone competencies set standards related to the development of professional values and interpersonal communication skills to effectively adapt to the needs and preferences of a diverse population. However, little practical guidance has emerged to provide post-graduate educators with a framework to instruct resident education. Given the limited dedicated health disparities or cultural competency curriculum in residency training, it is imperative to explore whether resident experiences in contrasting social and economic (minority, low-resource vs. non-minority, higher resource) clinical settings, and serving diverse patient populations, affects development of communication and professional values competencies. We aim to explore resident experiences in diverse clinical environments and affect on interpersonal communication skill development and understanding of health care disparities.

METHODS AND DESIGN:

We plan to conduct a qualitative study of three emergency medicine residency-training programs (University of Michigan, University of Chicago, and Emory University). Residents in these programs train at 3 hospital sites. These sites include an academic center, and affiliated community hospitals, which vary by socioeconomic status, and proportion of minorities served. A representative sample of trainees will be recruited across all post-graduate training years.

We will begin conducting 1-on-1 in-depth semi-structured interviews in April 2016. Residents will be interviewed via phone. Each interview will be audiotaped, transcribed, and analyzed using systematic and iterative coding methods. Demographic data such as age, gender, race, ethnicity, year in training will be collected for all participants.

RESULTS: We will elicit resident reflections on their clinical experiences at their various training sites and explore individual and program factors affecting competency development. We plan to evaluate residents' health disparities knowledge development and application in clinical practice.

LESSONS LEARNED: We anticipate that this project will inform formal and informal strategies to develop cultural competency curricula for Emergency Medicine residency programs.

FUTURE APPLICATIONS AND NEXT STEPS:

The themes will also be used to design a survey instrument to gauge the impact of adapted educational curriculum at the participating training sites. We anticipate that developing curricula will enhance resident competency related to communication strategies and understanding of health disparities. The resident reflections and survey findings will be utilized to develop strategies to prepare emergency medicine residents to adapt to caring for diverse and socially complex populations.

Access to Dental Care Considerations for Patients with Multiple Sclerosis

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Background:

Multiple sclerosis (MS) is a neurologic disease that is widely variable in presentation. Disease progression is not the same for all patients with MS, yet it is important that MS patients regularly seek out professional dental care, as dental health contributes to overall systemic health. The purpose of this communication is to identify specific confounding factors in patients with MS that dental care providers should consider in overall patient management and addressed in their education/training.

Methods:

A literature search was conducted to identify evidenced obstacles an MS patient might face when seeking comprehensive dental care. Particular emphasis was placed on contributing factors external to the patient.

Results:

References from the literature search identified a number of considerations, organized in five domains, regarding access to dental care for patients with multiple sclerosis.

Self-Care/Management – Self-care and management is dependent on the complex interaction of personal, functional, financial and psychosocial factors. MS patients who are actively involved with their self-care are more likely to have a better quality of life, reduced disability and number of complications, improved outcomes and lower costs of treatment, while they are more likely to have poorer self-management when they do not have enough support and socioeconomic resources.

Financial Support and Ability to Work- Patients with MS have relatively high unemployment rates among all patients with chronic illnesses. Disability insurance accounts for ~ 27% of the patient's earnings loss. While a majority of MS patients are covered by Medicare or Medicaid, finding extra funds to pay for fees not covered can be overwhelming.

Community Resources - The National Multiple Sclerosis Society (NMSS) has many resources that can help alleviate some of the issues that MS patients face. Emotional, physical, mental, and financial burdens can play a key role in health.

Social Support - This is defined as “information from others that one is loved and cared for, esteemed and valued, and part of a network of communication and mutual obligation”. Often, those who lack social support show increased morbidity that can affect mortality and quality of life.

Transportation - Many report not wanting to ask others for transportation as they feel they are a burden. Patients also are more likely to spend 30 minutes waiting at the site of care for the start of their appointment when dependent on others.

Lessons Learned:

Literature review has identified a number of challenges that patients with MS must consider when they seek dental care. Growing awareness of these considerations will help dental professionals identify ways to better support patients with MS as they seek dental care. Incorporating this information in health professions curricula will help future providers become more aware of these confounders in comprehensive care of these patients.

Future Applications and Next Steps:

Subsequent investigations can now be specifically targeted as a subset of the overall problem. Interprofessional education provides opportunities for training future health care providers as well as educators.

Evaluation of Cultural Competence in Undergraduate Nursing Education

Norma Sarkar, Judith Policicchio and Nancy Ambrose Gallagher

Background

The Community Health Nursing course is a required course taken in the senior year of the undergraduate nursing program and serves 140 students in an academic year. It is important to include cultural competencies in nursing education. Faculty implemented three strategies to globalize the curriculum: immersion experiences in Ecuador and India; videoconferencing with Haiti and India and community projects with vulnerable and cultural groups. A class blog allows them to compare and contrast community characteristics and social determinants of health across these varied populations.

Action, Methods or Intervention

Research question #1: How effective are each of the three global clinical immersion strategies in changing students' knowledge, skills and attitudes related to cultural care competencies?

The Cultural Intelligence Scale (CQS) was administered in January, 2016 at the beginning of the semester and in April, 2016 at the end of the semester. CQS measures one's ability to effectively work and appropriately behave in a culturally diverse environment. It is a validated 20-item self-report. Measures include: meta-cognitive strategy, cognitive knowledge, motivation and behavior. (Van Dyne, L., Ang, S., & Koh, C. (2008) Use of this tool will allow quantitative evaluation and comparison of the three types of clinical experiences.

Results

Forty-six students completed the pre-evaluation and all but eight of those students completed the post-evaluation. IBM Statistics SPSS 23 was used for data analysis.

Student age ranged from 21 to 24 years (Mean=21.53); 87.2% were female and 80.9% were White. Asian (6.4%), Black (6.4%) and Hispanic (4.3%) students make up less than 20% of the student group. Analysis of differences between times one and two demonstrate significant changes in the student CQ means. Mean scores at Time 1 ranged from 3.2 to 6.0 and between 4.3 and 6.3 at Time 2. The paired t-test shows changes were significant at $P < .05$ in all but two variables.

Lessons Learned

The study shows that our current curriculum is teaching students about cultural competence. In fact, 25% of our students reported a clinical experience on their post-test as their only cultural experience. To increase the impact of the experiences, it may be useful to schedule these experiences earlier in the semester.

Future Applications and Next Steps

Students will continue to be asked to complete the CQS upon entering and completing N456 in each of the next two semesters. In addition, we will analyze student response by category to clarify changes needed in N456. In addition, there are two other areas that we would like to focus on. First we would like to take a closer look at this data to determine if there are differences in the clinical groups and the type of cultural immersion experiences students receive during N456. Focus groups may be considered to more closely examine the impact of the three cultural experiences on student knowledge, skills and behavior.

References:

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