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Poster Abstracts

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POSTER 1

Low Cost Homemade Ultrasound Phantoms for Medical Education in Resource-Limited Field Hospitals

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Severe resource limitations and lack of computed tomography have led to expanded use of ultrasonography particularly in field hospitals within Syria, currently the site of the largest humanitarian crisis in the world. Opportunities for education in ultrasound training are lacking, in great part due to prohibitive mannequin costs.

Low-cost ultrasound phantoms were created to fill an education gap in vascular access and identification of pericardial effusion and tamponade.

Several homemade ultrasound phantoms for identification and cannulation of superficial and deep veins, identification of pericardial effusion and simulation of pericardiocentesis were made in a hotel room the night before an emergency medicine and critical care training course for technicians and physicians working in field hospitals in Syria. Pyrex containers, Jell-O (ultrasound conductive material) and Psyllium (simulating echogenic tissue granularity) and two sheep hearts were purchased from nearby market. Using hotel-provided 0.5L water bottle and coffee maker, initial layer was made by mixing ingredients above and was cooled for 4 hours. Water-filled Penrose drains with ends tied, normal heart and heart within water-filled sterile glove were placed over first layer and second layer was made to cover them.

Syrian technicians and physicians were able to properly identify and practice venous cannulation using bedside ultrasound and learned to identify normal and pericardial effusion mimicking cardiac tamponade. Participants verbalized satisfaction with ability to learn proper technique and practice on ultrasound phantoms. Total costs were approximately $40 total for multiple ultrasound phantoms, much less than $400 each as sold commercially. As of 4 weeks after training course, at least two cases of surgically confirmed pericardial tamponade have been diagnosed by participants using ultrasound and both patients survived surgery.

Homemade ultrasound phantoms are a promising cost-effective means for meeting an educational gap in ultrasound training, particularly for resource-limited hospitals and possible more broadly in residency education. Further studies should quantify subjective and objective benefit from such models.

Training with Homemade Phantoms Increases Ultrasound-Guided Venous Cannulation Procedural Competence and Confidence Levels Among Emergency Medicine Residents

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Background: The use of ultrasound for peripheral and central venous cannulation has become an essential skill in emergency medicine residency training. Prohibitive costs of ultrasound phantoms limit the abilities of many residency programs to adequately train residents. Studies assessing the utility of homemade phantoms in medical education are lacking.

Objective: To assess subjective and objective utility of homemade ultrasound phantoms. Methods: 18 emergency medicine residents at a large government hospital in Gaziantep, Turkey each performed 10 ultrasound-guided IV attempts on patients, half occurring before and half after a training course that featured a homemade ultrasound phantom used for practicing vein identification and cannulation. We conducted an prospective feasibility study using pre- and post-training surveys comparing confidence levels (0-5) and utilized self-reporting success rates of IV cannulation attempts before and after a training session.

Results: Two phantoms with 14 total penrose drains were made. Self-reporting among residents demonstrated an improvement in successful ultrasound-guided patient peripheral vein cannulations from an average of 47.8% during the first 5 attempts to an average of 71.1% during the last 5 attempts for all 18 residents. No change in success rates was noted from 1st to the 5th attempts and from 6th to the 10th attempts, suggesting benefit only arose from training session and not from initial experimental learning. On surveys with a scale of 0-5, residents reported increased confidence in: performing ultrasound-guided venous cannulation on patients (3.05 to 3.83), identifying the correct probe (4.5 to 4.94), adjusting gain and depth (3.3 to 4.8), visualizing veins in short axis (3.7 to 4.9) and long axis (3.1 to 4.5), differentiating arteries vs. veins (4.4 to 4.9), and vein cannulation on a phantom model (3.7 to 4.4). Residents generally wanted to practice more (4 to 3.94) than the 1 hour provided. Almost all residents leaving comments requested more time to practice.

Conclusion: Homemade ultrasound phantoms are cost-effective and provide both subjective and objective benefit to emergency medicine residents learning ultrasound-guided vascular cannulation. Ideal training sessions likely should last longer than 1 hour.

Developing and Assessing Embryology Web Resources for Medical Education

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Human embryology is a topic that presents many difficulties for learners. While it has been reported that the use of multimedia increases comprehension and retention of this four-dimensional subject, few comprehensive embryology websites exist. Searching for useful resources (i.e., videos, interactive activities) is time-consuming and few studies have assessed the effectiveness of the resources that exist. Our goal is to assemble embryological educational materials in a single module for each embryology session in the M1 and M2 courses, and evaluate how these educational materials are utilized and impact student performance. Each module was designed to present a brief summary of the key material presented in class, related videos, clinically relevant congenital disorders, a glossary of terms, interactive activities, and a short assessment. We asked entering M1 students to complete a pre-survey to determine their understanding of embryology, the number of related courses taken, resources used and time spent studying the topic prior to attending medical school. A similar survey will be administered at the end of their M2 year to determine how they now rate their understanding, what were their study habits during M1/M2 years for this topic, and how useful they found the modules. We are also following student's time spent on the modules to determine if their use correlates to improved scores on examinations. Current data suggests the majority of students have taken advantage of the modules and have found them beneficial. Further analysis is needed to determine if the time spent on each module influenced student performance.

The Why, When, and How of Reflection in Resident Clinical Education

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We conducted a critical literature review of the ways that reflection is used in medical education of residents. Reflection is the process whereby a professional considers his or her past actions or emotional responses to an event, why the event transpired as it did, how the professional's own actions or emotions contributed to this event, and the changes that can be made to improve future outcomes. Reflection is seen by many as a versatile and crucial aspect of medical education, due to its role in deepening clinical reasoning and self-evaluation, but it is not always used effectively. To reveal how reflection is understood and utilized in medical education, we searched PubMed on January 11, 2016 using search terms "reflection[ti] OR reflective[ti]" and "reflection[ti] OR reflective[ti] AND residents." The papers we found showed the many uses of reflection, and varying awareness of the theory and proper application of reflection.

This literature review discusses the uses of reflection that are promising, and those that are misguided. In conclusion, reflection must be used critically and taught effectively so students and residents can appreciate the value of reflection, making them more likely to utilize it at all levels of medical training and practice.

POSTER 5
Impacts of Offering Pre-Medical Education Workshops at Oakland University

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This study was performed in hopes of understanding how a series of pre-medical education workshops would alter preparedness for and attitudes towards the medical school admissions process within the Oakland University (OU) pre-medical student population. This study is significant because it is one of very few research studies in pre-medical education addressing a way to funnel information to pre-medical students struggling through the application process.

Three workshops were created on different aspects of the medical school application process including: interview techniques, personal statement and essay writing, extracurricular activities and letters of recommendation. Each workshop was led by a qualified guest with experience in their respective topic. This pilot study took place at OU and had a total of 33 participants, utilizing a pre/post survey design. Using the pre-survey allowed for participants to serve as their own control. Pre/post surveys utilized a Likert scale and will be analyzed using a dependent samples T-test and descriptive statistics. Open-ended questions were also included in the post-survey and will be analyzed based on frequency of response.

It is expected that the series of workshops will improve feelings of preparedness and alter attitudes in a positive manner. This research was performed in hopes of further identifying materials, which will help pre-medical students at OU in applying to medical school, as well as determining whether or not workshops are an effective method of conveying these materials.

Older Adult Perspectives on their Role in a Community-Based Health Profession Education Project

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Background: Although 18.7 million adults ages 65 and older volunteer for their communities each year, it is unclear which factors motivate them to participate in community-based education programs, such as the Partners in Care (PIC) program. PIC pairs medical, physical therapy, and nursing students together to conduct home care visits with older adults. This project seeks to understand why older adults volunteer for such programs and obtain feedback for program improvement.

Methods: This mixed-methods study employed a survey measuring attitudes about volunteering and an optional focus group. The research team developed the survey tool, which included 25-likert scale items and two open-ended questions. Alpha-factor analysis was performed on the survey data. In addition, a focus group was held with 13 randomly selected volunteers. The discussion was recorded, transcribed, and analyzed using thematic analysis.

Results: A total of 101 surveys were sent with a response rate of 62%. The ages of the respondents ranged from 65 to 86+ years of age. Analysis of the survey and focus group data revealed seven themes for why older adults volunteer: altruism, personal development, feeling part of a larger community, education of students, uniqueness of program, enjoying being with students, and sharing unique health experiences as older adults. Feedback on the program and suggestions for improving recruitment was also collected.

Conclusions: PIC provides students the opportunity to engage older adults and gain insight into interprofessional teamwork. By understanding why older adults are motivated to volunteer, we hope to expand the program and improve volunteer satisfaction.

A Longitudinal Health Coaching Mentorship Program to Prepare Medical Students as Educators

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As medical students will shortly be thrust into a landscape filled with patients who are suffering from preventable disease, it is imperative to start developing skills to face these challenges in medical education. Medical schools traditionally emphasize biomedical science and clinical practice, often pushing "soft skills" like interacting with patients aside. We propose a longitudinal curriculum to better prepare medical students for their future roles as educators, focusing on teaching skills of health coaching to bring about behavioral changes in patients to reduce the incidence of preventable diseases. Rather than a simple lecture series, we envision a multidisciplinary program featuring a mixture of lectures, simulated patient encounters, real patient encounters, and a long-term health coaching experience in which students develop an ongoing mentor relationship with patients who are trying to make a positive lifestyle change. The main component of our proposal is the long-term mentorship. Students in groups of no more than three will be paired up with a patient volunteer who wants to make a positive lifestyle change (stop smoking, lose weight, exercise more, etc). Student will periodically meet with their patients to talk and check in with them. This mentoring relationship will give the unique opportunity for students to apply what they have learned in the lecture portion of the program and to hone their skills in a real-world exercise. We predict that students who take part in this exercise will be more prepared for clinical experience than those who receive solely lecture-based training.

POSTER 8

Interdepartmental Teaching on the Appropriate Use of Foley Catheters Can Lead to Improved Patient Outcomes

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Introduction: Foley catheter use is a modifiable risk factor to reduce iatrogenic urethral trauma and urinary tract infection (UTI). In our 1000+ bed community hospital, we implemented a system- wide catheter education program, difficult urinary catheterization (DUC) algorithm, and skilled catheter nursing (SCN) team to improve overall patient outcomes.

Methods: A retrospective review of DUC consults placed between March 2014 and September 2015 was performed. The pre-intervention group includes consults received by urology residents through May 2015. The post-intervention group includes consults received by the SCN team from June to September 2015. Descriptive statistics were performed.

Results: There were 86 male patients in the pre-intervention group (mean: age 70.7 years, BMI 28) and 21 male patients in the post-intervention group (mean: age 74.4 years; BMI 30). Reason for consultation in the pre-intervention group was: difficult placement (59.3%), gross hematuria (24.4%), abnormal anatomy (10.47%), low urine output (5.81%). Reason for consultation in the post-intervention was difficult placement (81%), abnormal anatomy (19%). In the pre-intervention vs. post-intervention groups, 7% vs. 19% had a history of prior difficult catheterization. Post-intervention, the SCN team successfully placed a catheter 71% of the time. Pre-intervention and post-intervention rates of false passage were 29% and 0% respectively. In the pre-intervention group, 54% of patients required a procedure by a urologist whereas only 20% in the post-intervention group.

Conclusions: System-wide nursing education and implementation of a SCN team reduced the frequency of catheter-associated trauma and subsequent procedures and improved patient outcomes.

Google-Based Learning (GBL): Interactive Team-Based Learning Instruction Using Google Drive

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Self-directed learning and interpersonal communication are essential for modern physicians entering multidisciplinary healthcare teams in a rapidly evolving field of new technologies, knowledge, and methods. There have been a number of new teaching methods employed in medical schools, including team-based learning and problem-based learning, which facilitate collaborative problem solving. Nevertheless, successful implementation of these conventional instructional methods requires advance preparation and assessments. Here, we will describe the process to create an instructional method that requires little preparation and utilizes constructivist principles to effectively promote self-directed learning, interpersonal skills, and higher-order levels of cognitive skills. Specifically, we will describe the use of Google Drive (a cloud-based document-editing application) to implement our instructional method called Google-based learning (GBL). GBL consists of three sections: a) a didactic lecture to review foundational concepts, b) a group activity in which students collaborate to create a document comparing three key lung infections on Google Drive while professor(s) provide real-time feedback, and c) a brief lecture integrating the microbiological bases and the immune-pathomechanisms of infections. GBL contains pre- and post-formative assessments to determine student progress and incorporates a survey to evaluate student satisfaction and elicit ideas for improvements of this educational tool. The creation of this educational instruction may improve the outcomes of medical students when compared with direct instructional methods. Finally, it may also allow students to develop clinical reasoning and interpersonal skills, which are essential characteristics for the next generation of physicians.

*Tied for Second Place in the 2016 Medical Education Week Best Poster Competition

Using Author Ware in the Cloud to Create Interactive, Systematic, Measureable, Collaborative, Shareable, Digital Content

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At the OUWB School of Medicine, we have been using an author ware application with Cloud storage and tracking options to create, collaborate, assess and edit online course modules. The modules are sharable, measurable and modifiable, digital content. The software application also includes an option to create an eBook.

Content created and stored in the Cloud can be easily integrated within a course management system. Organization is key in order to systematically present information to students along with resources like study aids and worksheets that are integrated into one module. The self-directed modules may inspire students to expand on their study skills preference and create their own study aids drawing on material in the modules. Measurability in the form of Score Center tracking that can be integrated into the Learning Management System (LMS) – or not - helps instructors gauge student competence. The Score Center can also track student use, for example, length of practice time with the materials and also log student feedback about the modules to help determine future value of providing course materials online. Share ability among content providers to be able to add and revise materials together is beneficial in the timely creation of materials. Flexible delivery and editing of content is available spanning various device options and provides convenience in using, reviewing and studying course materials in real time. Self-assessment exercises and activities provide drill and practice of clinical correlations. These options are available by the creation of score able activities provided by the software.

POSTER 11
Forgiveness Education For Health Professionals

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Can students forgive themselves for poor exam performance? Can physicians forgive themselves for medical error or other professional or interpersonal failures? The literature on student and physician mental health suggests the answer is often 'no', indicating a need for evidence-based education on self-forgiveness. However, quick and simple frameworks are lacking. Therefore, we are conducting a study in which participants listen to a short audio session (~ 20 min) designed to promote self-forgiveness. Preliminary data indicate this intervention is highly effective; for example, in response to the post-audio statement 'As I consider what I did that was wrong, I have forgiven myself', which was anchored at 1 = not at all and 10 = completely, the average was 7.7 (n = 17, SD = 1.2)! Fortunately, the need for this type of education appears aligned with medical student interest. In an OUWB medical humanities seminar, 13 out of 24 students listed 'anger/forgiveness and CVD' as one of their top 3 topics of interest – making it the most popular choice. This was surprising, given that there were 20 potential topics to choose from and that the runner-up was 'psychedelic medicine' with 11/24 students picking that topic. Since a number of studies indicate that self-criticism (i.e. lack of forgiveness) produces depression and anxiety - known contributors to burnout - we are excited that this self-forgiveness framework could be utilized within many medical education settings (from M1 to CME) and even extended to other high-pressure, high-stakes professions.

POSTER 12
Representing Curriculum Data With Graph Databases

Keith Engwall, MS LIS, AHIP
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As new requirements and approaches to curriculum assessment emerge, curriculum analysis must also evolve. New tools, such as graph databases, may facilitate new approaches to curriculum analysis. This poster outlines an investigation into how graph databases may provide a flexible framework for collecting and analyzing curriculum data.

Much deserved attention is given to curriculum analysis, both to assess the efficacy of the curriculum and in support of accreditation. Graph databases, used effectively in business in managing and analyzing large, complex, dynamic data sets, may prove to be an effective tool for curriculum analysis in medical education. Their schema-less structure provides flexibility in creating data models that accommodate data with differing characteristics but with similar roles and relationships in the overall data model. As additional data as well as their characteristics and relationships are captured, the database can adapt along with the model to facilitate evolving conversations about the medical education curriculum.

This poster provides an introduction to basic graph database concepts and outlines a proof-of-concept project to investigate the efficacy of the platform for integrating data manually collected by faculty with data from various sources, such as the curriculum management system and the clinical skills evaluation system. By establishing relationships between data points from different systems and designing queries that leverage these relationships, a more comprehensive picture of the curriculum may emerge and provide new insights into how different aspects of the curriculum impact each other.

POSTER 13

Dialogical Narrative Approach to Enhance Analytical Thinking and Student Engagement During Lecture-Based Classes

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The Dialogical Narrative approach is an interactive method to teach physiology for health professional students during didactic lectures. This interactive method integrates an interactive conversational style within a story-telling method. The story telling incorporates dialogue with the students, which is in a question-answer format that not only creates a motivating learning context but also builds an educationally safe and supportive environment.

A week before the lecture, students are provided with copies of the PowerPoint slides to be used. The students are required to review all the slides. During the lecture, the instructor guides the students through the material using story-telling and question-answer styles. The instructor also uses questions related to the material that encourage analytical thinking.

There is an emphasis on building an educational relationship between students and teachers. Relationship-centered learning goes beyond student-centered learning, in recognizing and rehabilitating the role of the teacher. There are strong theoretical foundations for relationship-centered learning. There is the dialogism of Bakhtin, with the recognition of the importance of interactivity. There is also social constructionism where it is accepted that meaning, knowledge and understanding are jointly constructed with others.

The Impact of a Holistic Review Process on a New Medical School

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Diversity in the physician workforce lags behind the rapidly changing US population. Since the gateway to medicine is medical school, diversity must first be addressed in the admissions process. Many medical schools are changing the way they review applications. While academic preparation remains a key indicator of success, schools seek students with additional attributes and experiences that demonstrate they are poised to meet the needs of a diverse patient population.

In this study, I examined the holistic admissions review process at the Oakland University William Beaumont School of Medicine. Using data from the first five application cycles, I compared the demographic and experiential differences between the applicants selected using holistic review to a test sample selected using academic metrics. The dataset consisted of 4,342 applicants divided into three groups: holistic review, academic selection, and the overlap group comprised of applicants selected using both holistic review and academic selection. To identify differences between groups, I used a combination of chi-square analysis and analysis of variance. Further, I analyzed student outcomes to understand whether students selected holistically were as successful as their peers nationally.

Holistic review created a more diverse pool of students in terms of race and ethnicity, gender, disadvantaged status, and first-generation college status. And, holistically selected applicants reported more time spent in premedical experiences such as community service and paid employment. Importantly, the first class of students selected using holistic review met or exceeded traditional benchmarks for medical student outcomes including USMLE Step scores, 4-year graduation rate, and residency match.

Teaching Residents to Effectively Communicate with Patients: Media Utilization in a Resident Internal Medicine Clinic

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Introduction: In the fast paced media world of today, what is the best way to communicate with low socioeconomic status patients from a high volume clinic? Despite having limited information on the efficacy of videos as a means of supplementing patient information, particularly to the captive audience in waiting rooms, this practice can be quite commonplace.

Methods: We designed a prospective cohort to address this question, wherein a nine-minute informational video addressing functionality of the resident clinic was played in the waiting room over a three-month period. Over 200 patients filled out a survey designed to assess the effectiveness of the video in increasing the comfort level with the presented information.

Results: Results determined that there was a statistically significant trend between the amount of time waited and video watched ($p=0.0031$) and between amount of video watched and: how to contact the clinic ($p=0.0122$), what to expect when they arrive for appointments ($p=0.0335$), the purpose of annual physicals ($p=0.0106$), how referrals work ($p=0.0168$), and how to get medication refills ($p=0.0264$). Interestingly, there was no correlation between the number of years that a patient had been with the clinic and level of understanding of clinic procedures.

Conclusion: Our study shows that using educational videos in the waiting room can be an effective way to communicate important supplemental information to a challenging patient population.

A New Active Learning Activity in Pathology Rotation of Diagnostic Medicine Clerkship: To Complete a Death Certificate and Present it at a Diagnostic Morbidity and Mortality (M&M) Conference

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Death certificate is the source for mortality statistics and an important medical document. Currently medical students received very little formal education on how to complete a death certificate. We recently introduced M&M case study as an active learning exercise in DM clerkship. All students were provided with the same case for retrospective chart review, a blank death certificate form to complete, and written instructions. They were given a week to complete the form and to present it at an educational M& M conference specifically designed for DM clerkship. Thirty-eight students submitted their completed forms so far. Their answers for immediate cause (final disease/condition), disease/condition leading to immediate cause, and underlying cause, and estimation of approximate interval from onset to death were highly variable. Of these students, 10/38 (26%) chose a wrong condition/disease for immediate cause and a condition leading to immediate cause, 7/38 (18%) chose an inappropriate underlying diagnosis, and 27/38 (71%) filled their forms without using the known specific pathology diagnosis (T-cell lymphoblastic lymphoma) as underlying disease. Terms like mediastinal mass, malignancy, lymphoma/leukemia, T-cell lymphoma, or lymphoblastic lymphoma were used instead. 11/38 (29%) of students did not complete estimation of approximate interval from onset to death for each condition/disease. The case was reviewed together at a conference and these mistakes were discussed. In conclusion, M&M case study is a great active learning exercise to teach medical students how to perform sequential analysis of the causes of death and to appropriately complete a death certificate.

POSTER 17
HistoConnect: An Online Integrated Module

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Educators in various fields, in particular, medical schools are relying on technology, advanced software and resources than ever before. Online modules, are occupying important places in the learning process as they complement live lectures in students' learning. They can also be very beneficial when it comes to the USMLE 1 preparation if utilized well, as they encompass many advantages such as virtual accessibility and pace control.

Hereby we propose to create online comprehensive, educational, integrated organ system modules targeting year two medical students that correlate to each organ system block in their curriculum for studies and reviews.

The module will include multiple interactive activities to enhance teamwork, promote self-learning, complement live lectures in students' learning and increase the learning curve. Histology-histopathology will constitute the backbone of each module where images of both normal and abnormal tissues, in various disease states, will be compared and discussed, thus, shedding light on disease process and related pathophysiology. The module will include interactive power point videos using ShowMe videos that will replace long wordy paragraphs introducing concepts. In addition, flashcard activity built into SoftChalk and an application called VoiceThread, which will allow students to interact with each other and their teacher and ask questions will be used.

The outcomes will be accessed through various parameters covering knowledge, skills, attitudes, and professionalism, in addition to a timely feedback.

Evaluation of the online modules will be obtained through SoftChalk software center that is licensed to Oakland University (OU).

These integrated modules based on structural biology, normal and pathological, will offer a better geography for understanding and achieve a high level of critical thinking and in depth understanding of the school curriculum.

Two Medical Students' Global Health Experience

Jay Kachoria, MD Candidate; Andrew Leamon, MD Candidate
OUWB Class of 2017

After our first year of medical school, we decided to work abroad to foster our interest in global health issues. In clinics abroad, students gain exposure to unique healthcare delivery methods while observing pathology seldom seen in the United States. Additionally, students also gain intimate cultural insight that will prove invaluable. We chose Calcutta Rescue (CR) for their street medicine program and their scope of practice.

CR is a non-governmental organization situated in Kolkata, India providing impoverished citizens with healthcare and educational opportunities. Our duties consisted of reviewing charts, shadowing, observing therapy sessions, and logging data. Non-typical days involved street medicine mobile clinics, attending meetings, and traveling to the countryside to see a CR project.

Working with CR provided us with knowledge of tuberculosis and leprosy management including medication and preventive care for family members. We gained insight into NGO operation and the decisions that CR makes to maximize quality care and prevention despite their tight budget. We also developed a cultural understanding of our patients and colleagues that translates to a comprehensive understanding of their human condition.

CR exposed us to effective public health interventions and difficulties in providing care for the destitute. For medical students interested in global health, trips of this nature are invaluable to their development as compassionate and knowledgeable physicians. Global health experiences, such as the one we undertook, are vital in the development of modern day medical students who will work in a healthcare landscape where not only diseases, but cultures are globalizing.

The Cognitive Characteristics of Human Learning Process and Medical Education

Serena Kuang, MD, PhD

OUWB Department of Biomedical Sciences

In this presentation, the author uses the perspective of Neurosciences and Cognition to 1) analyze the four basic steps of information flow and processing during the human learning process including information reception through the five senses, information sorting and orchestrating by the limbic system, information output (body's responses or reactions to external information input), and information storage in the form of memory; 2) construct the functional organization of the human learning process based on the previous analysis; 3) identify the characteristics of each step in the human learning process and bring conscious awareness of these characteristics and their value to both medical educators and medical students to better manage teaching and learning; 4) address where educational efforts/approaches can be made for creative teaching and learning in medical education based on the functional organization and the characteristics of its components; and 5) provide examples of how human higher cognitive functions correct, modulate, modify, or overwrite human instinctive cognitive decisions and lead a discussion of how human beings can treasure their learning ability and not waste or abuse it.

POSTER 20
Creation of an Online Multidisciplinary Self-Learning Tool for Medical Students

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The implementation of an integrated, multidisciplinary and problem-based curriculum that also incorporates self-study and self-preparatory materials in a single place is necessary in medical schools. The creation of such educational tools will allow instructors to optimize in-class time engaging higher order levels of cognitive skills, help students self-assess their progress and facilitate the integration of basic science and clinical knowledge. Here, we will describe the process of creating an online educational module that is interactive and multidisciplinary (e.g. immunology, pathology) and allows for individualized learning while offering the users the ability to control their learning environment. Moreover, we will combine our module with case-based in-class discussions. The module will begin with a baseline assessment to determine student knowledge in basic immunology and immunopathology. The core of the module will consist of explanatory videos, animations, MCQs, matching and identification activities and explanatory written passages. The lectures will be divided in two sections: a) a group activity to summarize the most important concepts learned in the module, and b) a case-based approach that utilizes individual and team analysis of clinical vignettes associated with basic science concepts taught in the module. Upon completion of the module and the discussions, students will have access to a survey to evaluate user satisfaction and the value of the module and associated discussions. The creation of this educational tool may improve the outcomes of medical students, and allow the creation of interdisciplinary blended learning experiences (e.g. flipped-classroom) necessary in an integrated medical school curriculum.

POSTER 21
Revealing the Learning Mindsets of Medical Students

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Students' mindsets towards learning can powerfully influence their learning success. Dweck's research indicates individuals can be placed on a "fixed to growth mindset" continuum according to their implicit views of where ability comes from. Growth mindset creates motivation and resilience—and leads to higher achievement. Medical students have not yet been studied against this continuum.

Using qualitative methods of inquiry and analysis, this research seeks to answer the question, "What are the learning mindsets of the current M1 and M2 medical students at OUWB (Oakland University William Beaumont School of Medicine), and what learning experiences do they believe have contributed to the development of their mindsets?" The one-on-one interviews are designed to capture student's beliefs on intelligence and ability as fixed or changeable traits, behavior in response to failures, willingness to take on challenges, motivation, value on performance or learning, and a general idea of how the student is performing in medical school thus far. Revealed learning experiences provide insight into how students' mindsets were established.

Interviews have begun and will continue through April 2016. Results will be analyzed in May 2016. It is hypothesized that a student's mindset will be related to their learning experience and environment. Those admired for being hardworking and perseverant will have growth mindsets; whereas, students admired for being smart will have more of a fixed mindset.

Awareness of medical students' learning mindsets gives educational faculty a starting point for improvements in the medical education experience at OUWB with possible incorporation of growth mindset training.

Gelatin Paravertebral Spine Model - A Practical Design for Training General Surgery Residents' Basic Skills in Placement of a Continuous Infusion Catheter

Benjamin Lurvey, MD Candidate[1]; Shruti Sevak, MD[2]; Ashley Woodfin, MD[3]; Zachary Hothem, DO[2]; Rose Callahan, MS[2]; James Robbins, MD[4]; Kathryn Ziegler, MD[4]

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We aimed to create a way to safely teach the insertion of continuous infusion catheters in the paravertebral space in rib fracture patients. Two lumbosacral gelatin spine models have been described in China and Korea for training in ultrasound-guided nerve blockade. Our goal was to validate a gelatin-interfaced, thoracic spine-rib model to simulate the placement of the paravertebral catheter itself in an economic and easily reproducible fashion.

The model was prepared by embedding a foam thoracic spine replica, with bilateral attached ribs, into a gelatin mixture in a plastic container. Once solidified, a pre-selected area was excised on each side, such that the model could be easily re-filled with new gelatin for use by each participant. One hundred and one participants underwent a 12-minute didactic session on ultrasound technique for catheter placement followed by practice on the gelatin model.

Preparation of the gelatin model was simple and inexpensive. The texture and echogenicity of the model were subjectively comparable to those of tissue and osseous elements in vivo and were clearly identified using ultrasound. The pre-selected, exchangeable catheter placement area provided for an efficient and effective method to test accurate performance in catheter placement by multiple users.

In conclusion, this is the first gelatin-interfaced, thoracic spine-rib model with removable testing areas that can be used by multiple users. This model can provide an inexpensive training tool that can be used to simulate ultrasound-guided placement of a continuous infusion catheter in the paravertebral catheter space in a surgical simulation setting.

The Colectomy Improvement Project: Do Evidence-Based Guidelines Improve Institutional Colectomy Outcomes?

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This study evaluates whether increased adherence to 8 specific practice parameters leads to improved outcomes in patients undergoing elective colorectal resections. Additionally, we analyzed whether physicians with better compliance achieved better patient outcomes. Compliance to practice parameters and subsequent outcomes were compared between two groups relative to an educational intervention promoting the 8 best practice guidelines selected. 485 patients were identified over a four-year period and were separated into a pre-education (n=273) and a post-education (n=212) group. To educate the perioperative care team we held educational sessions for surgeons, anesthesiologists, residents, pre-operative, peri-operative, and post-operative nurses. We held two grand rounds discussions and educated the nurses on all shifts. The educational sessions involved a presentation outlining the necessity to improve colectomy outcomes and explaining all the best practice guidelines and rationale for adherence. After the educational intervention there was increased compliance in 5 of the 8 practice parameters (p<0.05). When outcomes where examined, the readmission rate (2.4% vs. 8.4%; p=0.005) and the incidence of deep surgical infections (0% vs. 1.8%; p=0.01) were significantly decreased when comparing the post-educational group to that of the group prior to intervention. A lower rate of anastomotic leaks was identified in the post education group, but this did not reach significance (1.9% vs. 5.1%; p=.09). When analyzed individually, the most compliant physicians achieved better patient outcomes than their peers. Education of the operative team improved adherence to practice parameters that and this may have contributed to improving patient outcomes.

Tied for Second Place in the 2016 Medical Education Week Best Poster Competition

A Pilot Project of Developing an Objective Structured Clinical Examination (OSCE) on Anemia Workup Utilizing Virtual Cases for 4th Year Medical Students During Diagnostic Medicine Clerkship

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The objective structured clinical examination (OSCE) is widely used in clinical clerkship to test a student's clinical performance and competence. Oakland University William Beaumont (OUWB) School of Medicine developed a new and unique two-week long clerkship, Diagnostic Medicine (DM), in its clinical curriculum, half in pathology/ laboratory medicine and half in radiology. However, an OSCE is yet to be developed for DM. The authors started a pilot project of developing an online OSCE on the diagnostic workup of anemia. Eight patient cases of anemia were developed online utilizing SoftChalk Cloud, a digital curriculum authoring software. Each case included a succinct patient history and a complete blood count (CBC). Students were evaluated on their ability to identify pertinent critical lab values in the CBC, come up with the most likely evidence based diagnosis and request additional tests to assist in confirming their proposed diagnosis. The patient cases would cover a spectrum of common and critical causes of anemia including acute and chronic leukemia, thrombotic thrombocytopenia purpura, autoimmune hemolytic anemia, and nutritional deficiencies. Upon submission of their answer, the student would be provided with feedback regarding each correct and wrong response with references, if appropriate. The proposed pilot project is currently being tested among a small group of medical students, residents and fellows before considering implementation during the future OUWB DM clerkship.

Recording Cadaver Medical History and Pertinent Dissection Findings Enrich the Role of Anatomy in Enhancing Medical Students' Professionalism

Ameed Raoof, MD, PhD[1]; Aleah Chang, MD Candidate[2];
Brianna Schmidt, MD Candidate[2]; Stefanie Attardi, PhD[1]; Daniel Schlegel[1];
Mallikarjuna Barremkala, MD[1]; William Forbes, DDS[1]; Douglas Gould, PhD[1];
Brent Thompson, PhD[1]; Judith Venuti, PhD[1]; Michelle Jankowski, MAS[3]

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This work aims to enhance first-year medical students' professional attitude through the proper handling of cadavers; correlating dissection findings with the cause of death; and recording dissection notes in the anatomy laboratory. Students were provided with their donors' cause of death and medical history. They filled out a cadaver assessment form to outline inspection findings before dissection. The rational was to create a deeper and a more meaningful appreciation of the cadaver's role in facilitating anatomy education. Students filled out dissection findings and recorded pertinent pathological findings. Care of their tables and donors were monitored periodically. Students were informed categorically of any inadequate table care. A survey was administered at the end of the semester to assess students' opinions about these measures. Participation rate was 93%. More than 47% agreed that the new measures helped improve their teamwork skills; relationships with donors; and ability to express empathy. However, only 35% believed that the new measures improved their ability to cope with death. The new measures had positively influenced students' perception of the cadaver as an individual and recognizably promoted respect, better teamwork, and empathy. The lower mean response to the influence of these measures on students' ability to cope with death is noteworthy. Further steps are needed to ensure that students' interaction with cadavers is a more positive experience and enhances professional attitude. The survey will have a more significant impact if measures are reassessed regularly, and responses of future students are analyzed and compared to ensure a sustainable outcome.

POSTER 26
Student, Administrator, and Faculty Perspectives on Lesbian, Gay, Bisexual, and Transgender-Related Curriculum Content

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The lesbian, gay, bisexual, and transgender (LGBT) minority historically has been neglected by medical professionals. However, medical schools today are shifting their attention to preparing medical students to better care for these patients. This study compares two subgroups (students and administrators/faculty) regarding their perspectives on the integration of LGBT-related education and training opportunities in a medical school curriculum. Differences in the subgroup responses may indicate a mismatch in teaching effectiveness, or some other gap in the curriculum. Conversely, similarities may indicate that the faculty/administration teaches LGBT content effectively. Data for comparison was collected using an adapted survey that was distributed via email. The analyses detected no significant differences in independent samples t-tests comparing mean scores on knowledge and attitudes towards various teaching points between students and faculty/administrators. However, the results nonetheless pointed at significant lapses in curricular material. Across all responses, mean scores for feelings of how well how well various curriculum topics are taught reached a maximum of 35 points, on a scale of 0 (nothing) to 100 (a lot). While perhaps it is encouraging that the two subgroups felt that they knew similar amounts and that they felt that the curriculum topics were taught equally well, indicating no mismatch in teaching effectiveness, it is discouraging that the amount that they knew regarding LGBT-related curriculum topics was so low.

POSTER 27

Oakland University William Beaumont School of Medicine End-of-Life Communication Training: An Exploratory Study

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Introduction: Patients and families identify physicians' communication skills as being crucial to high quality end-of-life (EOL) care. However, physicians-in-training at all levels report a lack of preparation in communicating issues related to EOL care. Multiple studies indicate that physicians-in-training receive little formal training and have low self-perceived comfort with many important aspects of EOL communication. These findings raise questions about how the EOL communication training at Oakland University William Beaumont (OUWB) addresses students' needs and concerns.

Methods: Participants were medical students enrolled at OUWB with memorable EOL care experiences during their clinical rotations. Subjects wrote narratives in response to open-ended prompts about their experiences with EOL care, their training background, and their beliefs about EOL communication training. Subjects also completed a background questionnaire and rated their comfort with various aspects of EOL care. The text responses were analyzed for common themes using nVivo, a qualitative research program.

Results: Ten subjects completed the survey. EOL communication training was divided up by pre-clinical, clinical, and personal life experiences. Only 40% of participants were satisfied with their EOL experience, due to reasons such as personal feelings and knowledge deficits. 60% of participants felt the patient was satisfied with the interaction. All respondents felt that EOL communication skills could be taught and emphasized the importance of observing experienced physicians with real patients.

Conclusion: In contrast to previous studies, OUWB students believe that EOL communication skills can be taught and are receptive to expanding training opportunities at both the pre-clinical and clinical levels.

POSTER 28
Analysis of the Hidden Curriculum in OUWB's Scholarly Concentration Program – The M1 Year

Kara Sawarynski, PhD; Dwayne Baxa, PhD
OUWB Department of Biomedical Sciences

Our Capstone Scholarly Concentration Program contains M1 year courses constructed to educate students on many aspects of research (from question identification, preparing a proposal, literature, IRB approval, to planning for data security and analysis). Our courses have evolved to include additional aspects of self-directed learning, including timeline management software and just-in-time online modules, which are designed to bolster student educational gains in the hidden professional skills curriculum that are so important for success as a burgeoning physician. Usage of both modules and the timeline software is tracked and aligned with milestone progression, and analyzed together with student feedback. Usage analysis shows that these modalities are enabling individualized, just-in-time learning. After initial resistance, students have found the timeline management tool to be helpful in keeping their project on track, as well as to practice time management, and we see a steady increase in usage as projects develop. We find it crucial to continuously evaluate and track the student usage of the new modalities in order to best produce meaningful updates and instructions, and that flexibility and consistent communication is key to early forward movement in student project design. We intend for our SC curriculum to result in the appreciation of research design complexities, the understanding of research conduct feasibility and the drive for the investment in research activity. Our goal is to instruct students in the process of research and to encourage love of life-long learning with the development of professional skills in project implementation, communication, time management, and self-directed learning.

A Novel Educational Module for Placement of
Continuous Intercostal Nerve Blockade for Traumatic Rib Fractures

Shruti Sevak, MD[1]; Ashley Woodfin, MD[2]; Zachary Hothem, DO[1]; Rose Callahan, MS[1]; James Robbins, MD[3]; Kathryn Ziegler, MD[3]
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We developed a training curriculum that includes both lectures and a hands-on inanimate model to teach residents the technical skills needed to safely and efficiently place continuous infusion nerve block catheters with an ultrasound-guided approach.

A randomized, prospective, blinded trial involving 103 general surgery residents and medical students was conducted. All participants underwent a 12-minute didactic session on the uses of ultrasound and the continuous infusion catheter. The control group then performed video-graded examination of ultrasound-guided placement of the catheter in the gelatin paravertebral model. In contrast, the experimental group had additional hands-on instruction in ultrasound technique prior to taking the same video-graded examination of paravertebral catheter placement using an OSATS scoring tool.

The experimental group demonstrated a greater proficiency in ultrasound-guided technical skills than the control group as measured by OSATS global rating score (23 vs. 16 points ,$p < 0.0001$), and higher OSATS checklist scores (10 vs. 8, $p < 0.0001$). Overall, 96% of the experimental group achieved a passing score for the exercise versus 65% of controls ($p < 0.0001$). Measurements of the catheter tract revealed that 48% percent of participants in the experimental group successfully placed the catheter within the target zone, versus 12% in the controls ($p < 0.0001$).

In conclusion, subjects who underwent hands-on ultrasound module training were able to more skillfully place a paravertebral catheter within the pre-selected target area in a gelatin rib model, had higher OSATS scores, and demonstrated more comfort with using an ultrasound device in placement of the catheter.

*First Place in the 2016 Medical Education Week Best Poster Competition

POSTER 30
Measuring the Effectiveness of Peer-Assisted Clinical Skills Training

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A medical student's confidence in clinical skills has a dramatic effect on their learning experience during clerkships. This has been demonstrated in studies pertaining to Simulation Training during the first two years of medical training. Despite research on peer-assisted skills training, little quantitative research exists. This study examines the impact of peer-assisted training on students' confidence and their performance during Objective Structured Clinical Examinations. First- and second-year medical students at OUWB were self-selected into one of two categories: students participating in workshops or control students. Workshops were held throughout the year focusing on taking histories and performing physical exams. Second-year students provided demonstrations to first-year students. The study analyzes changes in student confidence and compares OSCE performance of Workshop Group participants to the Control Group. Comparison of Workshop and Control Groups showed that there was an increase in confidence for performing and teaching skills, but the increase was not substantial enough to be significant ($p>0.04$). The exception is that the Workshop Group for the Class of 2017 showed significant improvement in confidence in Teaching Vital Signs ($P=0.004$). There was no significant difference in performance on end-of-year OSCEs when comparing Workshop Group and Control Group participants ($p>0.04$). The results of the study failed to demonstrate a significant difference between students participating solely in the APM Clinical Skills curriculum and students acquiring additional practice through peer-assisted workshops. Limitations associated with the study, including a small study population and poor attendance in workshops, may have limited the impact of the provided peer-assisted training.

Solid, Cystic and Tubular - A Compact Gelatin-Training Model for Teaching Basic Skills in Ultrasound-Guided Procedures

**Ashley Woodfin, MD[1]; Shruti Sevak, MD[2]; Zachary Hothem, DO[2];
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Evidence supports ultrasound-guided procedures as a valuable, cost-effective tool to increase patient safety and procedure efficacy. Our goal was to provide medical students and surgical residents a training curriculum to gain increased competency and confidence with ultrasound-guided procedures, such as biopsies and vessel cannulation.

The model was prepared by embedding representations of a cystic structure (an olive filled with mustard), a solid structure (a grape) and a tubular structure (a void left by a plastic pipette) within gelatin. Participants underwent a 12-minute didactic session on ultrasound principles, including a pre- and posttest. They then had hands-on practice with the model, followed by a video-graded testing session were they were tasked to perform successful aspiration of mustard from the cystic structure, aspiration of grape skin, and placement of a catheter within the tubular structure using the Seldinger technique. Furthermore, a self-reported comfort level with the material pre- and post-training (Likert scale) was collected.

Fifty participants (34 third and fourth year medical students on clinical rotations, and 16 general surgery residents) completed the entire didactic and testing session. We observed a median increase of 5 points out of 24 between their pre- and posttest scores ($p < 0.0001$). Self-reported comfort ratings assessed on a 5-point Likert scale demonstrated a statistically significant increase of 10 points out of 35 ($p < 0.0001$) after completion of the modules.

In conclusion, this ultrasound curriculum with model-based training provided helpful instruction to develop accuracy, confidence, and skill in basic ultrasound-guided technique.

Human Trafficking Education and Assessment for Medical Students

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Introduction: Victims of human trafficking experience health problems, with a recent study suggesting that 87.8% of victims had been in contact with a health care professional while they were enslaved. This places medical professionals in a unique position to interact with victims. Consequently, it is imperative that professionals acquire the skills to detect and report such cases. The goal of this study was to determine whether an educational intervention would effectively increase medical students' awareness of human trafficking and alter their attitudes and behaviors towards detecting and reporting victims.

Methods: The study was conducted with 98 students at OUWB School of Medicine. Participants listened to a presentation on recognizing and reporting victims of human trafficking, and completed a pre and post-session survey. Pre/Post survey questions were analyzed to assess alterations in responses. The outcomes evaluated were: awareness of the crime, confidence identifying a potential victim, and willingness to report a victim. Additional information was gathered to assess students' opinions towards further interventions.

Results: Mean differences in pre-post scores on the 4 item Likert scale questions were evaluated, with positive differences showing an improvement in the hypothesis being tested. Matched pairs t-tests found significant improvement ($p<0.001$) in responses to questions related to awareness of human trafficking (Mean Difference=0.61, SD=0.57), confidence in ability to detect a potential victim (Mean Difference=1.59, SD=0.79), and self-reported willingness to report a potential victim (Mean Difference=0.54, SD=0.79).

Conclusion: The use of an educational intervention increased medical students' knowledge of human trafficking, as well as their confidence in victim detection and their willingness to report potential victims.

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