Gayle Acton, Carole Taxis. Flipped Classroom: Examples of Teaching Strategies

Today’s students grew up in the Information Age with almost constant Internet access, YouTube, Facebook, online games and a host of other digital resources. They can easily multitask, doing their homework while texting their friends, IMing on Facebook, and listening to music all at the same time. Instead of standing in front of the classroom lecturing while students are engaged in technology, the flipped classroom harnesses the technology to engage the students in learning. A flipped classroom is one where students are introduced to class content prior to class, and then apply the content in face-to-face interactive classes. In this blended learner-centered approach, face-to-face interaction is mixed with independent study via technology and pre-preparation. Students complete class preparation activities before class, then come to class ready to apply the concepts reviewed prior to the face-to-face class.

Methods: The authors have been using the flipped classroom teaching method and our poster will present teaching strategies used in our flipped classrooms.

Results\Outcomes: Learners complete guided preparation tools such as pre-tests, preparation sheets, online discussion groups, online guided preparation questions, and videos, which result in meaningful engagement in a rich variety of in-class, active learning strategies such as case studies, problem solving, role playing, simulations and group discussions. Some activities may require them to use in-class technology such as answering questions on their phones or searching for information on the web to complete class activities.

Discussion: The flipped classroom is innovative and engaging, but it is not without challenges. It takes faculty resources, time and effort to learn the methodology and strategies for implementation. There is also a learning curve for the students. They must take responsibility for their own learning by reviewing class content prior to coming to class. Some students are resistant to this methodology and would rather come to class and let the faculty tell them what they need to know. However, once the student adjusts to the flipped methodology, they start to appreciate how it creates a more dynamic interactive classroom experience, resulting in actively engaged learners. It also allows faculty to use technology familiar to students, rather than requiring students to listen to hours of in-class lectures while abstaining from using technology. Students and faculty both say the flipped classroom can result in deeper, more complex student-centered learning.

Sandra Adams, Leticia Z. Bresnahan, Jan E. Patterson. UT Health San Antonio Quality Improvement and WipeDiseases™ Education Interventions Facilitate Sustainable Clinical Practice Changes in Primary Care

Problem: Chronic Obstructive Pulmonary Disease (COPD) is a devastating lung condition with high morbidity & is the third leading cause of death in the US. Nationwide. Fewer than 50% of primary care (PC) clinicians follow COPD guidelines.

Methods: Approach: Guidelines require spirometry to diagnose COPD and also require annual influenza vaccination. We documented gaps in local COPD care using clinical data. To address these gaps, we designed & implemented educational curricula & learning strategies at PC clinics. Using the WipeDiseases Foundation ’s COPD web - based , interactive CE courses, small group learning & one -on-one training , we delivered interventions to interprofessional teams (nurses, physicians, nurse practitioners, physicians assistants , medical assistants , administrators) in order to increase knowledge , change behavior , & improve clinical practice for COPD patients .

Results\Outcomes: We used a mixed-methods approach to assess educational impact, including direct observations, provider interviews, & clinical data analysis. Local COPD prevalence increased from 3.8% (baseline) to 5.4% (post-intervention). Clinician knowledge/application improved significantly (mean 54% to 89%). The baseline statistical process control limit (mean) was 64% (1103/ 1726) for spirometry & 56% (967/1726) for influenza vaccinations prior interventions & both increased to 79% (978/1236) and 99% (1223/1236) respectively during the 15 months post -interventions . These rates have either sustained (influenza vaccination rates - 99- 100%) or continued to rise (spirometry testing - now in the 84-85% range) two years after the educational interventions were stopped. Barriers/ Facilitators: Clinic support staff (medical assistants) had not been trained in spirometry; clinical leadership underwent transition during interventions. We facilitated implementation by online training, face-to-face flipped classroom sessions addressing barriers to applying to clinical practice, and dedicated FTE funding.

Discussion: Interactive & high-quality CE and QI interventions applied to primary care are associated with real and sustained clinical practice changes in clinician behavior as evidenced by improvement in spirometry and influenza vaccination rates. These well-defined techniques are likely to lead to improved patient outcomes and may be disseminated to other practices.
Michael Ainsworth, Karen Szauter, Era Buck. **Standardized Patient-based Clinical Skills Assessment for Undergraduate Pre-medical Students: Building EPA 1 Competencies Prior to Medical School**

The Transformation in Medical Education (TIME) program, an initiative of the University of Texas System partners, medical schools with general academic institutions. The goal is to develop a competency-based curriculum that also shortens the pathway to the MD degree. We describe the clinical skills curriculum developed by the University of Texas Medical Branch-Galveston School of Medicine (UTMB) for the pre-medical school phase of the program, and the progress of the first 2 cohorts of under graduate (UG) pre-medical students from the University of Texas-El Paso and University of Texas-Rio Grande Valley.

Methods: UTMB faculty collaborated with UG faculty to introduce new experiences relevant to health science education, enabling students to begin medical school with advanced skills. UG students interacted with medical school faculty on both the UG and UTMB campus for 90 hours to achieve predefined milestones associated with the Core EPAs. Instruction focused on competence domains of patient care, communication and professionalism. Year 1 sessions (on the UG campuses) specifically emphasized the medical interview. Year 2 sessions (on the medical school campus, partnered with the McGovern Medical School at the UTHSC-Houston) emphasized the physical examination using standardized patients. Upon completion of the 3-year undergraduate academic program, each of the first 2 cohorts admitted to UTMB (N=22) engaged in a 6-week pre-matriculation course covering multiple EPA-related topics. The course concluded with a competency-based standardized patient activity assessing students’ ability to perform a comprehensive medical interview and physical examination on an undifferentiated patient.

Results/Outcomes: Students were assessed in four categories: medical interview, physical exam, write-up of the patient encounter and interpersonal/communication skills. All students in this cohort successfully met the competency standard for EPA 1- a standard set at 80% of check list items, meeting the same requirement for current UTMB medical students at the end of year I. Most students also met the milestones for the more advanced skills of written documentation and interpersonal/communication skills.

Discussion: We conclude that significant progress toward EPA 1 was achieved by students prior to beginning formal medical school training as a result of collaborative planning and instruction with undergraduate partners. Substantial questions remain including issues of pace (the optimal timing for progression through EPAs; how much is too much; how fast is too fast), sequence (can a student master EPA 1 before achieving a mastery of the foundational sciences that underlie physical diagnosis) and geographic separation (how much instruction can be conducted via distance education without sacrificing efficacy?).

Suzanne Alton, Sheba Luke, Maureen Wilder. **Using Technology to Conduct Clinical Site Visits**

Clinical site visits (CSVs) are critical to assess the progress of nurse practitioner (NP) students. The increase of students in primary care along with the ongoing national shortage of nursing faculty presented a challenge to evaluate students in the clinical setting.

Retaining faculty and keeping program costs down while ensuring quality are essential to programs that provide NP education. The University of Texas Medical Branch’s (UTMB) masters of nursing (MSN) NP program, recognized for its high quality, has experienced increased applications from out-of-state and long-distance students. The need to conduct effective assessment of students by CSVs contributed to an increased workload for NP faculty. To overcome these challenges, the faculty implemented and evaluated a quality improvement project using FaceTime to conduct online CSVs to assess NP student progress.

Facetime is a video conference program available on Apple devices. Concerns about patient privacy and legal requirements were met through use of Apple’s WPA2 Enterprise system on iPads, along with the use of UTMB’s authenticated wireless network Wi-Fi cards. The project met the stringent requirements of UTMB’s Office of Institutional Compliance and Information Services.

Methods: Site visits were conducted by SON faculty with real-time observation of the NP student-patient encounter, along with a discussion with the preceptor regarding student performance. Faculty then completed the student evaluations as well as site and preceptor evaluations. Faculty, preceptors, and students were surveyed regarding ease of use and acceptability of the iPad visits.

Results/Outcomes: Based on the clear majority of survey responses, the FaceTime CSV provided faculty with the information needed to fill out the required evaluation forms of the student, preceptor, and site, and the iPad visits were easy to use and acceptable to all stakeholders.
Discussion: Using FaceTime for visits saved faculty travel time and used fewer MSN program resources. Because of the success of the program, the MSN program now requires FaceTime CSV for long-distance students, except when there are extenuating circumstances.

**Attitudes of Medical and Graduate Students in the Biomedical Sciences Before and After Interprofessional Experiences**

Interprofessional Experiences (IPE) in healthcare education foster increased collaboration across disciplines, as well as improve patient care and patient satisfaction. However, the benefits of IPE in biomedical education specifically comprising of PhD graduate and MD medical students has not yet been investigated. An IPE using a problem based learning (PBL) pedagogy, grouping medical and graduate students, which involves investigation of questions without defined resolutions is anticipated to develop skills such as evidence acquisition, self-directed learning, and collaboration. 

Use of IPE-PBL in a combined cohort is expected to lead to increased mutual understanding and performance in respective careers.

Methods: The current study is an autoethnography of joint interprofessional experiences of medical and graduate students. Students participated in several IPE-PBL experiences as part of their medical/graduate training. Throughout this study, participants switched roles from participant to researcher, critically examining their experiences. A total of ten students, six graduate, three medical, and one MD-PhD student participated in the study. After completing various IPE courses, each participant composed a narrative detailing the strengths and challenges of their IPE as well as personal background accounts that may describe their biases prior to IPE. After narratives were collected, revisions for clarity were requested. A team of five participants performed contextual analysis and gleaned emerging themes based on the following research question: What are graduate and medical students' attitudes toward interprofessional experience pre- and post-participating in IPE?

Results\Outcomes: The following themes emerged from the contextual analysis about participants' attitudes prior to participating in IPE: (1) a sense of separation between clinical- and research-focused fields, (2) unfavorable preconceptions about students from the other discipline, (3) negative perceptions about group work in general. Emerging themes post-IPE were: Students from both programs expressed (1) feelings of appreciation for the work of the other group, (2) an increased sense of comradery, (3) the desire to seek IPE in their future careers.

Discussion: IPE between medical and graduate students in the biomedical field offers a unique opportunity to explore the roles each group plays in advancing medicine. Participation in IPE creates awareness of the roles each group can take, and how they can be mutually beneficial. Training programs with IPE between graduate and medical students are needed to nurture relationships between medical and biomedical researchers which may then grow into future multidisciplinary collaborations post-training.

References:

Daniel Antiporta, H Serag, A Pezo, CM Reátegui-Rivera, MM Dacso.  
**Training in Leadership for Global Health: A proposed framework for the Global Health Leadership Academy at the University of Texas Medical Branch**

Leadership is a crucial building block for health systems. However, there are limited formal training opportunities in global health leadership, a skill set that entails adopting a multidisciplinary and inter-sectoral approach to health. To respond to this need, the University of Texas Medical Branch is developing a short course, the Global Health Leadership Academy (GHLA), targeted at graduate-level learners who are planning for careers in global health. This endeavor requires a common framework which takes into account the driving forces of health challenges as well as a synergistic approach for leadership, management and governance competencies. The aim of this study is to analyze the main frameworks, skills and competencies for leadership, management and governance in global health to develop a novel curriculum for the GHLA.

Methods: We reviewed leadership frameworks, skills and competencies from government bodies, non-governmental organizations, and academic institutions, as well as suggested leadership skills and competencies for health in peer-reviewed journals. We used the Consortium of Universities for Global Health (C UG H) consensus domains and competencies in leader
ship as the cornerstone for this analysis. To prioritize curricular relevance, a 6-point score was created to identify the domains/competencies most cited by all the frameworks.

**Results\Outcomes:** We compared four leadership frameworks and two leadership skill sets for health. The most referred domains were "Collaborating, Partnering and Communicating" (4.7 points) followed by "Capacity Strengthening" (3.3 points) and "Strategic Analysis" (2.8 points). Based on this analysis, we prioritized a set of 6-domains and 30 competencies for academic training in leadership for global health. The framework incorporates a broader concept of health systems that includes the role of household and social determinants of health. We also emphasize the importance of integrating cross-cutting 'soft' skills that are necessary for most of the domains and competencies.

**Discussion:** Addressing challenges in health systems will require strong leadership. Academic global health programs should include leadership, management and governance competencies in their curricula. This study synthesizes information from the most recognized efforts from academia. Governmental and non-governmental organizations. We propose a comprehensive set of domains and competencies that form an innovative and practical framework for short-term academic training in global health leadership.

**Ashraf Aly, Huda Sarraj, Ola A Aly. Does Pre-testing Improve Medical Students’ Performance in the Classroom?**

To maximize the learning outcomes from lectures given to medical students, we tested the hypothesis that pre-testing positively affects medical students' performance in the classroom. We also evaluated the utility of lectures as teaching tools in the same setting.

**Methods:** Third-year medical students at the University of Texas Medical Branch were randomly assigned into control or study groups in this prospective study. The control groups (211 students) received ten post-test board-style subject-specific multiple-choice questions immediately after a lecture in 3 pediatric subspecialties (cardiology, nephrology and infectious disease). The questions were offered over a ten-minute period and were designed to cover the important highlights of each lecture. The study groups (223 students) received the same questions immediately before and after each lecture. A paired t-test analysis was performed to examine the mean differences between post/pre-test (study) versus the post-test only (control) groups. The same test was also used to compare the mean post-test only (control) and pre-test scores.

**Results\Outcomes:**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Study Group</th>
<th>Control Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test N/mean grade</td>
<td>Post-test N/mean grade</td>
<td>Post-test study vs control</td>
</tr>
<tr>
<td>Cardiology</td>
<td>105/4.7</td>
<td>105/8.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Nephrology</td>
<td>72/5.3</td>
<td>72/7.9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>46/6.4</td>
<td>46/8.2</td>
<td>0.023</td>
</tr>
</tbody>
</table>

As shown in the table, the t-test revealed a statistically significant difference in mean post-test scores between the study and control groups in all specialties with a p-value <0.05. Similar results were obtained when we compared the mean scores between the post-test only (control) and the pre-test groups.

**Discussion:** Based on our data, the pretesting resulted in a measurable improvement in medical students' performance in all lectures. Pre-test questioning appeared to draw the student's attention to important lecture highlights, as shown by the improvement in the post-test scores. The limitations are that testing takes away from allotted lecture time (20 minutes total for pre and post-test questions) and requires extra preparation from the lecturer. Our results contradicted another study that did not show such a difference. The lecture remains an important tool in medical student education as shown by the significant improvement of student scores when the control (post-test only) groups were compared to the pre-test groups. Larger studies, including other medical specialties, are needed to validate our results.

**References:**

Marge Benham-Hutchins, Patty Hamilton Solum, Nicole Murry. Developing and Implementing an Undergraduate Nursing Quality and Safety Course

National initiatives\(^1\)\(^3\) have called for integrating quality and safety content into health profession curriculum. The purpose of this project was to develop and implement an undergraduate nursing course that incorporates national initiatives and the essentials for BSN education\(^4\) which include patient centered care, evidence based practice, quality, safety, informatics, and inter-professional practice.

Methods: The main objective of this initiative was to identify where the national recommendations\(^1\)\(^5\) for undergraduate quality and safety education were offered within the existing nursing curriculum and create a required quality and safety course offered during their junior year. A curriculum crosswalk was developed to identify where the Essentials for Baccalaureate Education for Professional Nurses (AACN)\(^5\) specifically - Essential II: Basic Organizational and Systems Leadership for Quality Care and Patient Safety; Essential IV: Information Management and Application of Patient Care Technology; and Essential VI: Inter-professional Communication and Collaboration for Improving Patient Health Outcomes were included in the current curriculum. The new course was designed to build on existing courses students had taken during the sophomore year: Patient Centered Care and Research. While also providing a foundation for courses taken during the senior year: Foundations for Interprofessional Collaborative Practice (nursing students take this course with students from medicine, pharmacy, and social work) and Leadership and Management of Nursing Care.

Results/Outcomes: The dedicated quality and safety course was developed by a team of nursing faculty and approved at the School of Nursing and University levels. Parts of the class were piloted, as part of another SON class, in the Spring of 2017 and feedback was incorporated into the final version. The new, required class was offered for the first time in the Fall of 2017 with 60 student enrolled.

Course Description: This course is designed to prepare students for professional nursing practice. Provides opportunities for synthesis of theoretical, evidence-based, and clinical knowledge with emphasis on quality care and patient safety. Objectives: Critically evaluate the evidence base to support nursing, inter-professional practice and patient safety, demonstrate knowledge of quality and safety core competencies, critically evaluate how information and technology are used to communicate, manage knowledge, mitigate error, and support decision making, and apply theoretical models to nursing practice.

Discussion: This poster will provide specific examples of the course content, delivery methods, and student assignments. Student and faculty evaluations of the course and lessons learned will be presented.

References:
1. Institute for Healthcare Improvement (optional) Include http://www.ihi.org/Pages/default.asp up to 5 relevant
2. Centers for Medicare & Medicaid Services references (not https://www.cms.gov/center/gualit.asp included in the word

Andrew Bergemann, Joel Daboub, Stephanie B. Corliss, Aaron Rochlen, Stephen Smith, Elizabeth Nelson. Using a Group Admissions Exercise to Measure Teamwork Skills Related to Success in Medical School

Success in contemporary medicine requires clinicians to display strong leadership skills, teamwork skills, and professionalism. We have made a conscious decision to assess these qualities as part of the admissions process and to promote development of these skills throughout the curriculum. The multiple mini-interviews (MMIs) have emerged as reliable measures of non-cognitive skills and are linked to success in medical school, but does not assess an applicant’s ability to function within a team environment. As teamwork skills are critical to success in our curriculum, we created an admissions task to be completed within a group environment. We describe here the creation and implementation of the group admissions task and scoring rubric to measure non-cognitive skills in teams and discuss how these skills are subsequently measured throughout the problem-based learning (PBL) curriculum.

Methods: During the group admissions exercise, five applicants worked together to form a single consensus response to a prompt. A facilitator evaluated each applicant on performance in each of five areas (collegiality, contribution to task, inclusiveness, movement to completion, and respectfulness). Ratings were based on a 1 - 6 Likert scale with criteria descriptions as anchors (e.g., inclusive: 1 = dominates content and process, 6 = fosters collaboration by soliciting input from others). The scoring rubric mirrors the assessment form used by PBL facilitators to rate students on their professionalism,
teamwork, and leadership throughout the first-year curriculum. Prompt s and scoring rubric s were piloted with multiple observers, and evaluators were trained on the scoring rubric using videos from the pilot. Descriptive statistics were calculated for group admission exercise scores.

**Results/Outcomes:** Preliminary results reveal variability in applicant performance on the group task in each of the five areas of interest. This suggests the exercise is able to distinguish amongst those with varying levels of non-cognitive skills. Correlation analysis suggests this exercise measures different types of skills than those measured by MMI, perhaps those more focused on teamwork and interpersonal communication. These results show promise for the development of more holistic assessments of applicants. Future work will explore the effectiveness of the MMI and group admissions assessments to predict student success on PBL assessments.

**Discussion:** Our school is engaged in a process of evaluating the components of its innovative admissions process for their relative effectiveness in predicting desirable non-cognitive skills in our future clinicians. Results indicate that we will produce information useful to other schools as they modify their admission’s processes.

**References:**

Phillip Carpenter, Leonard Clearly. *Standardizing the standardized exams: Coordinating the AP, MCAT, And USMLE exams in a spiral learning curve*.

In the process of designing an integrated medical curriculum, we consulted the USMLE Step I exam content outline. We observed significant redundancies with respect to many topics listed on the MCAT exam and even the AP Biology exam. Minimal guidance regarding the depth and breadth of coverage for the MCAT and Step I exams is provided in the content outlines.

**Methods:** An analysis of the content outlines of the AP Biology, MCAT, and USMLE Step I exams found redundancies in many topics including Biochemistry and Molecular Biology.

**Results/Outcomes:** To address the issue of content redundancy amongst standardized exams, we have developed granular spiral learning objectives for two key topics in biochemistry and molecular biology: DNA repair and gene expression.

**Discussion:** The presence of redundantly listed content on standardized tests such as the MCAT and USMLE Step 1 exams generates potential confusion for both educators and learners. Why cover topics that have previously been taught and why re-learn topics that have already been taught? This confusion is exacerbated by the vagueness in the content outline descriptions. We address this by developing a spiral learning model with objectives that can be applied to facilitate the coordination of foundational sciences within the pre-med and medical student experience.

Janelle Chavez, Melissa Kok, Shine Chang. *Hindsight From Established Clinicians: barriers to choosing careers in cancer prevention early in training*.

In cancer, medical students may grasp the benefit of prevention but are more often drawn to the heroism of curing the disease, which has implications for populating the clinical cancer workforce in academia, possibly contributing to the low recruitment of clinicians into the field of cancer prevention. The purpose of this study was to identify barriers to pursuing careers in cancer prevention faced early in medical training by analyzing the career trajectory of clinicians currently in academic medicine and cancer prevention for opportunities to intervene.

**Methods:** Between July 2016 and October 2017, we conducted a qualitative analysis of structured interviews with faculty members at the University of Texas MD Anderson Cancer Center. Recordings and handwritten notes obtained from individual interviews with physicians involved in clinical cancer prevention were coded and analyzed using qualitative data management software, Atlas.ti. The preliminary themes that emerged from the analysis were then organized and presented to describe the various hindrances to entering careers in cancer prevention.


**Results/Outcomes:** Of three major barriers, the first centered around misconceptions participants had about the field of prevention when early in their training. Several participants said that they had initially viewed prevention to be more aligned with primary care or natural product medicine than relevant to oncology. A second common theme was the absence of clear career pathways and visible mentors due to the immaturity of the field of clinical cancer prevention. A final problem was the belief that clinical oncology and cancer prevention were mutually exclusive career pursuits. Multiple individuals indicated that either they or their colleagues perceived cancer prevention to oppose their work in oncology, rather than as its necessary complement.

**Discussion:** Identifying and addressing specific barriers to pursuing careers in academic cancer prevention may have important impact on reducing the burden of cancer. Suggested approaches include dispelling misconceptions through education, proposing innovative curricula that incorporate preventive oncology, offering clinical cancer prevention rotations, and increasing the prevention content of accrediting examinations.

*Yvonne Covin, Palma Longo, Neda Wick, Katie Gavinski, James Wagner. Investigating the Validity of Clinical Reasoning Rubrics in Assessment of Medical Student SOAP Notes*

Several assessment instruments intend to measure clinical reasoning ability communicated in Subjective-Objective-Assessment-Plan (SOAP) notes, yet we lack evidence corroborating their validity to a standard. We set out to compare the validity evidence, specifically relationships to other variables and internal structure, of three clinical reasoning rubrics: Clinical Reasoning Task (CRT) checklist¹, Patient Note Scoring Rubric (Park)², and Summary Statement Assessment Rubric (SSAR)³. Final rubric scores from a Virtual Patient module (VPM) were compared to a gold-standard clinical reasoning test, the Clinical Data Interpretation (CDI).⁴

**METHODS:** In November 2016, 235 pre-clinical medical students in the *Foundations of Clinical Reasoning* course completed the CDI test, solved a VPM, and then created individual summary SOAP notes. Thirteen students participated in Think Aloud (TAL) interviews and sixteen students wrote a SOAP note on a second clinical case. Analysis used 230 SOAP notes derived from the VPM, 16 written SOAP notes from the second clinical case, and 13 TAL interviews. TAL interview transcripts were scored with CRT. The 230 SOAP notes were graded with the CRT, and SSAR rubrics. The sixteen SOAP notes from the second clinical case were graded with the Park rubric. Relationship to other variables of the three rubrics was determined by correlation of note scores between the three scores. Internal structure was examined by score correlation of assessment domains within each rubric.

**RESULTS:** Statistically significant agreement achieved in all qualitative coding analysis [Intra-class Correlation Coefficient range: 0.77 – 0.98]. A large, significant correlation between the Park and CRT rubric global scores was seen ($r = 0.71; p = 0.002$). We observed three significant correlations between Park and CRT rubric assessment domains ranging from $0.51 – 0.63$. Internally within the CRT rubric, significant domain associations were noted ranging from $0.55 – 0.72$. Within the SSAR rubric, significant domain associations were noted ranging from $0.15 – 0.55$. No correlation found between any final SOAP note rubric and student CDI scores.

**DISCUSSION:** Differing strengths of association between measured variables of clinical reasoning expression in the CDI and rubrics suggest varying degrees of overlap in the framework underpinning their assessment domains. Strong correlations between rubric scoring domains may suggest early areas of clinical reasoning capability development, which may not be yet captured in CDI testing. Future directions of this work should include testing at all training levels for progress tracking and standard-setting.

**References:**

Lisa Elferink, Majka Woods, Era Buck. National Board of Medical Examiners Customized Assessment Services for Undergraduate Medical Education – Lessons Learned.

United States of Medical licensing Examiners (USMLE) Step 1 scores are considered one of several key factors for selecting applicants to interview, compete and rank in the National Resident Match in the United States. The National Board of Medical Examiners (NBME) offers a web-based, fee-for-service Customized Assessment Service (CAS) for medical school faculty to create and implement examinations tailored to evaluate the efficacy of local undergraduate medical education (UME) curricular goals and objectives. Recognizing the emphasis UME places on USMLE Step 1 exam performance, the University of Texas Medical Branch (UTMB) contracted NBME CAS examinations as one assessment tool for evaluating the impact of the year 1 and 2 preclinical courses comprising our traditional four-year Integrated Medical Curriculum (IMC) on medical student preparedness for STEP 1 and USMLE assessments in general.

Methods: Faculty trained to search and evaluate NBME CAS assessment items, blueprinted NBME CAS assessment items to align with specific IMC course goals and objectives. Beginning with the class of 2018, UTMB administered various course specific NBME CAS examinations as a formative assessment at the midpoint and end of eleven of the twelve preclinical courses comprising the traditional four-year IMC consistent with NBME test administration requirements.

Results/Outcomes: Approximately 920 preclinical medical students completed 40 NBME CAS examinations, blueprinted to specific IMC course objectives over a consecutive two-year period. Preliminary data were analyzed to 1) determine the alignment of assessment items with course objectives; 2) identify cognitive and clinical skill gaps for curricular improvement; and 3) establish curricular wide passing criteria for students benchmarked to National performance measures.

Discussion: The considered use of institutional resources is essential for the assessment of student preparedness for STEP 1 as well as USMLE performance in general. Our experience to date using NBME CAS assessment items has 1) enabled us to identify best practices for training faculty to blueprint NBME assessment items that best align with and assess curriculum objectives and goals; 2) to familiarize students with the USMLE assessment format to reduce USMLE testing anxiety; and 3) map curricular strengths and identify areas for improvement. We are examining the considered use of NBME CAS examinations as one of several formative assessment tools to identify, intervene and remediate preclinical medical students at risk for lower performance in UTMB’s preclinical curriculum and Step 1 exam performance.

Moshtag Farokhi, Catherine M. Walker, Adelita G. Cantu, Rebekah J. Salt, Cristina E Martinez. An Interprofessional Collaborative Oral Health School Based Prevention Program Evaluation

Social determinants of health (SDH) impact overall health and quality of life. Poverty lower educational levels and poor access to healthcare can increase health disparities, including dental health disparities. A systematic review of oral health programs has suggested that a combination of oral health education and promotion programs is more effective than oral health education alone. The purpose of this School Based Prevention Program (SBPP) was to provide both oral health education and promotion to low-income Hispanic fifth graders using interprofessional education (IPE) with dental, dental hygiene and nursing students at UT Health San Antonio. The team hypothesized that the intervention would: 1) Improve oral health and positively influence attitudes toward dentistry for the fifth graders, and 2) Provide a positive IPE experience for health professional students.

Methods: Prior to the intervention, IRB approval was granted and consent forms were obtained from the parents. A pre-post survey design was used to assess and address the oral hygiene and nutrition practices of the fifth graders. The SBPP consisted of age appropriate oral health practices, oral hygiene Instruction, and nutrition guidelines. Each IPE student completed a SDH tutorial prior to the Intervention and took a post survey to evaluate their educational experience.

Results/Outcomes: The fifth grade sample strongly agreed that healthy and clean dentition was important, p= 0.013. The IPE students perceived the curriculum addressing SDH (p=0.005) and educating pre-adolescent students about the importance of oral health (p= 0.015) experience significant. The IPE health professional students also agreed that SDH Influences oral health and needs consideration regarding the delivery of oral/health care for this underserved population (p= 0.010). There was a significant association (p=0.030) between the IPE professional student views of educating this population In a SBP influences their perception of oral health. More females IPE students strongly agreed In these responses compared with their male counterparts.

Discussion: An Interprofessional and interdisciplinary approach to health in vulnerable populations is vital. Oral health education and promotion in pre-adolescents using SBPP and IPE can have a positive Influence on attitudes and behaviors In Improving health outcomes.

References:
Carol Gaskamp  

Adapting to a Curriculum Change: Who will Train These Summer Interns?

Graduate nursing students in the teaching concentration at University of Texas at Austin School of Nursing (SON) provided training as a teaching project during the summer to prepare BSN student interns for our Children’s Wellness Center’s (CWC) back-to-school immunization clinics and sports physicals. Changes in the MSN curriculum resulted in changes in the teaching courses, and graduate students could no longer complete the teaching project in the summer. Neither the School of Nursing or CWC had faculty or staff available in the summer to provide this needed training for the Summer 2017 Interns. A creative approach was needed to meet the training needs.

Methods: A grant from the St. David’s Foundation provided funds for the student interns, including graduate student trainers. Two Pediatric Nurse Practitioner (PNP) students were recruited to be the trainers. Using the teaching projects from prior summer sessions and resources from state and national organizations, a SON faculty/administrator developed the training program and created a training manual for the PNP students to use for the training sessions.

Results/Outcomes: Interns surveyed at the end of the experience reported being very well or extremely well prepared for their internship. CWC staff were satisfied with the student performance. And, the PNP student trainers reported having a very positive experience. The training program and training manual provided them the resources needed for the training.

Discussion: Curriculum change can have unexpected consequences and opportunities. Finding a solution to this problem required a change in perspective. Instead of providing an experience for students preparing to be academic nurse educators to demonstrate their ability to develop, implement, and evaluate an education program, the training was an opportunity for students who will be working in primary care settings to gain experience in staff development using materials prepared by others.

Sharon Forest, Sandra Priest.  

Interactive Tools for Teaching Quality Improvement

Teaching and learning in a predominantly online Doctor of Nursing Practice program provides the benefit of flexibility of schedule for faculty and students. However, with limited face-to-face time, the challenge is to influence and actively engage students in the learning process. Innovative activities and simulations provide a chance for students to interact directly, and choosing stimulating learning activities is critical for students to appreciate making the trip to campus. Games and simulations can increase active participation and motivate learning.

Methods: An interactive team-based learning game that simulates the dynamics of a complex system is utilized in the DNP Quality Improvement (QI) for Clinical Practice course. The activity promotes an understanding of key QI principles in a way that helps students appreciate the relevance and interplay of the individual components. The game simulates a 24-hour day in hospital setting and teaches students to think systematically and collaborate across functional boundaries to achieve system goals. A thorough debriefing post-game gives students the opportunity to reflect on their attitudes, assumptions, and beliefs that led to actions and results during the simulation as well as the chance to correlate the concepts to the DNP Essentials. In the debriefing, the key principles of collaboration, innovation, and data-driven decision-making are directly tied to the Quadruple Aim, which focuses on improving the health of populations, improving the patient experience, reducing the per capita cost of healthcare, and improving clinician and staff satisfaction.

Results/Outcomes: Students enjoy the 'experiential learning', and the hospital simulation game provides an opportunity for them to share a common experience that we refer to throughout the course and even during subsequent courses in the curriculum. Students report gaining valuable insight into their own thinking processes and describe how the game increases their understanding of how the key concepts of collaboration, innovation, and data-driven decision-making impact the quality of healthcare. Combined with QI methodologies and strategies, the simulation game better prepares students to develop and implement the quality improvement project course assignment.

Discussion: The need for quality and safety in patient care has been well documented in reports from the Institute of Medicine. Since the game’s healthcare quality principles are threaded into other courses in the curriculum, students have a chance to practice recognizing and applying the concepts in various contexts and from different perspectives. The simulation game provides a means to integrate theory into courses and have students use theory, as well as evidence, as a foundation for their scholarly practice projects and other assignments.
Astrid Grouls, Ahmed Salahudeen, Peggy Hsieh, Christine Wieseler, Rebecca Lunstroth. Art in Medicine: Medically Themed Art Workshops for Physicians in Training to Address Burnout and Improve Observational Skills

Physician burnout and inadequate physical examination skills negatively impact patient safety/outcomes. Additionally, resident physician burnout rates are as high as 76%. Burnout results in poor clinical judgement, impaired decision making and higher rates of clinical error. Educational studies suggest that art-observation courses improve trainee visual observation skills and that art workshops may be well suited for diminishing burnout.

Hypothesis: Providing resident physicians with structured dermatology lectures incorporating artistic representation of images will result in decreased resident burnout and improved visual literacy as compared to a control group given the same lectures without a period for artistic representation.

Methods: Participants were residents asked to complete 3 once-weekly hour-long dermatology lectures with three about 10 minute intervals to artistically represent a clinical image using colored pencils on paper. Controls got the same lecture without the drawing component. Visual literacy was measured by chest radiograph evaluation and a dermatology image-to-diagnosis exam. Burnout was assessed with the Maslach Burnout Inventory.

Results/Outcomes: Overall, art-workshops nested in noon conference didactics provided no statistically significant differences in measures for observational skills, visual diagnostic ability, or burnout after three, hour-long, once-weekly sessions over three consecutive weeks in comparison to controls. However, intervention-group feedback, after exposure to three sessions, was largely positive with regards to drawing in the classroom, and most strongly positive regarding drawing and stress reduction.

Discussion: The original findings represent an early phase of the Art in Medicine Program within the residency program. Incongruence between exam and burnout data versus participant workshop feedback might be secondary to study limitations, which include: low power in part due to participant drop-out and cross-over between groups, confounding variables.

Additional data is pending from a final workshop during a year-end retreat, where residents spent additional time on non-dermatologic images and resources. Further data is being collected this academic cycle as the program continues to evolve. This project prompted multiple additional interventions within the residency program and data is being collected to date regarding additional interventions. Workshops continue to date and we have added intermittent special events, evening events and a monthly newsletter. There is also a movement toward a more structured arts curriculum, such as including it in the year-end retreat permanently and for a formalized certificate program.

References:


Sherry Hendrickson. The Challenge of Change: Incorporating EBP into Curricula for Transgender Care

Health science professionals initiate ongoing development that extends beyond their initial educational preparation, yet face the challenge of staying current. One challenging area, perhaps due to deficits in educational preparation, is working with patients who identify as transgender. Evidence-based practice (EBP) guidelines exist to support care for transgender patients. The compelling need to prepare health science students to address this care gap has never been greater but are faculty a barrier? Transgender clients report having to educate health care professionals.

"When in the hospital I was really sick. I didn’t only not feel up to explaining (transgender) but I was afraid if I did I might receive worse care".

Methods: To support health science student’s understanding of these national EBP guidelines and implementation of best practices, CHANGE is required in how faculty themselves think and teach about the needs of the transgender population. Evidence-based health science websites were reviewed to distill resources useful for faculty self-education on transgender guidelines and nationally recommended changes applicable to educating our students.

Results/Outcomes: EBP guideline related to transgender care from the following sources will be shared:

- The Agency for Healthcare Research and Quality (AHRQ) CDC
Healthy People 2020
The Center of Excellence for Transgender Care, UCS

Discussion: EBP guidelines are broadly based on 2 main sources: 1) The World Professional Association for Transgender Health standards & 2) Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People. Health science professionals are a product of our educational system. Once faculty are aware of transgender EBP guidelines perhaps we can improve the next generation of health science professionals.

References:

Robert Hermann, Gregory K Spackman. Tracking 3rd Year Dental Students in the Oral Surgery clinic

The risks involved in dental extractions makes teaching the procedure to dental students unique. Besides suturing, the learning of oral surgery procedures may only take place on live patients under supervision. Some students may have a special interest in surgery and be more prepared, knowledgeable or experienced whereas other students may have little interest and sometimes may simply lack the skill or “stomach” for surgery. This research study will look deeper into this process of dental students learning extractions for the first time. The researcher is looking to know how does being primary operator on a student’s first case, either by choice or by circumstance, affect the rest of their initial training experience as defined by their first two weeks on oral surgery rotation. The researcher is also exploring how acting as an assistant or observer during their first extraction case affected the remainder of their initial training. The anticipated results predict that students who are primary operators for their initial case will seek this role often, gain more experience, and overall have more confidence in dental extractions. Students who assist or observe for their first case will seek the primary operator role less often, gain less experience, and overall have less confidence in dental extractions.

Methods: To answer these questions, we documented a student’s first extraction case with post-op surveys to record their role as either the primary operator, assistant, or observer and if faculty intervention was required.

Results/Outcomes: Results will be reported upon poster presentation.

Discussion: Pending completion of results reporting.

April Herrera, Sherry Hendrickson. Practice Makes Perfect: Changing Faculty Practices to Improve Strategies for Students HESI Exit Success & NCLEX Pass Rate.

In health sciences education competency exams challenge students to integrate all they have learned to that point and precede licensure testing. As a requirement to receive authorization to test for nursing licensure (NCLEX), Alternate Entry (AE) nursing students at UTSON must pass HESI Exit exam with a score of 850 or higher. Given the accelerated pace of the AE program faculty working with students the semester prior to NCLEX have successfully changed their practice.

Methods: A tailored remediation study plan is based on the Exit HESI result s and created jointly between the student and faculty if the student does not meet score of 850. In reviewing study strategies and course content, faculty also become aware of individual circumstances impacting a student’s study and testing. Averaging 45-60 minute per individual meeting, content deficits and strengths are reviewed as well as supportive ideas for "life happens" - issues. Remediation with students can be held in person, phone, or Skype. Plans made specifically for each student aim to maximize study time and reduce sources of stress. Nursing students and designated faculty review total HESI scores, assessment, analysis, planning, implementation, evaluation, community health, critical care, fundamentals, geriatrics, maternity, med-surg, pathophysiology, pediatrics, professional issues, and mental health scores in HESI Exit exam. Students are active participants in these "action plans" for studying, using testing strategies and identifying potential barriers to success. We incorporate Elsevier Adaptive Quizzing in these "action plans" and assign additional quizzes based on areas needed for improvement. Designated faculty stayed in communication with students while they studied for retesting of HESI Exit exam.

Results/Outcomes: Out of 50 students who took HESI Exit 1, 14 students did not meet the minimum requirement. After first remediation, five students did not meet minimum requirement for HESI 2. After the second remediation, four students did...
not meet requirement for HESI 3. One student stopped responding to faculty contact after HESI 4 but still continued to test for HESI 5 and HESI 6 until passing minimum requirements.

Discussion: Once all 50 AE nursing students met the minimum requirement for the HESI Exit Exam, only one student did not pass nursing licensure NCLEX on the first attempt. Students who are active participants remediation plans not only have direction to use testing strategies, but also to identify bridges to rise above potential barriers to HESI & NCLEX success.

References: https://evolve.elsevier.com

- Yuh-Fong Hong, Erica Yu. **Utilizing Big Data in Graduate Student Research Project: Challenges and Recommendations**

The magnitude of data generated and shared has increased immeasurably in recent years. Healthcare related data increase rapidly with the implementation of HER systems. The purpose of this study was to investigate the skills and knowledge gaps among graduate students in using big data sets for research projects. Utilizing big data in nursing practice and research has a great potential to improve patient safety and to enhance decision-making process to improve quality of care. Studies have identified challenges and barriers to big data implementation in research including the use of standard terminology, ethical implications, and data interpretation. Introducing big data concepts to graduate nursing students can help student’s learning big data analytics strategies, understanding the limitations and the required data ethics, and interpretation and presentation of results in the project development. With analysis of draft manuscripts, discussions, and reflection reports, the challenges and gaps to use big data for students’ projects were identified.

Methods: National Ambulatory Medical Care Survey (NAMCS) data sets from CDC were selected for students to develop their research projects. Students were taught to use secondary data analysis strategies to identify the related data and to develop research questions with the NAMCS survey questionnaire and data sets from 2008 to 2015. After finalization of research questions from NAMCS survey and data, students were guided to identify related variables, target the required data, conduct data analysis, interpret results, and visualize the outcome. During this development process, the challenging components were documented, issues on their progress papers were reviewed, and reflection of their experiences was analyzed after the completion of this research project.

Results/Outcomes: Four main challenges in skills and knowledge using big data in developing students’ research projects were identified at the end of the study: a) identifying variables from a specific big data set to create a clinical question, b) cleaning and targeting required data, c) conducting statistical analysis with the statistics program, and d) presenting the desired outcomes using visualization.

Discussion: Big data have gained momentum in healthcare research in practice and in academia. Introducing the big data concepts to graduate students can promote the utilization of big data from health information systems and other sources to improve patient care and safety. There is a great need to devise new tools, knowledge, and skills in the nursing curriculum when utilizing big data sets and to prepare nursing students for future big data challenges, analytical methods, and big data visualization.

References:


- Samuel Joseph, Nicholas King, Lawrence Lin, John K. Graham, Nathan Carlin. **Sacred Sites of Houston: How Faith and Medicine Interact; An Experiential Learning Elective for UTHealth Schools**

The objectives of medical education seem concrete: to learn the relevant pathophysiology, diagnosis, and management of diseases. However, there is far more to educating a compassionate physician capable of caring for the whole person. Additionally, it is well documented that patients want their care providers to inquire about or be comfortable discussing their spiritual needs². While most medical schools have implemented some form of spiritual education, the majority is superficial, taught via journal articles and classroom slideshow presentations. Realizing the need for a more effective approach, the authors constructed an experiential curriculum designed to enhance students' education of the spiritual and religious
dimensions of health and application in a clinical setting. In this presentation, we explore our community-based program, "Sacred Sites of Houston: How Faith and Medicine Interact" and its impact on one’s medical education.

**Methods:** Six (6), 2-hour, weekend sessions held throughout each semester in houses of faith throughout Houston, Texas. Started Spring 2016.
- Participants (per semester): 20-30 health professions students, 6-12 faith leaders, and 6-18 congregants, 1 Course coordinator.
- Faith leader(s): discuss the general principles of a world religion and describe how respective beliefs and practices interact with health and healing, including interactive tour of sacred space.
- Congregant(s): describe a personal anecdote of medical hardship and their perspective of how their faith related to their journey through illness.
- Students: participate in site visits
  - Spring 2018 - Medical School and School of Dentistry will participate
  - Fall 2018: Medical School and School of Nursing will participate

Course participants complete pre- and post-course surveys with questions related to demographics, knowledge of religions, and how medicine intersects with religion and spirituality. The students also submit an original reflection piece with their choice of medium and subject as derived from course content.

**Results/Outcomes:** Quantitative data: pre- and post-course survey data
- Statistical significance in students’ pre- vs. post-course basic knowledge of faith traditions and how members of those faiths approach matters of health and illness.

Qualitative data: student reflections
- Student appreciation for experiential component of course as part of medical education.
- Student appreciation for patient autonomy and a new perspective on the physician-patient relationship.

**Discussion:** We seek both to inform participants of the religious and cultural factors that affect health and to provide an encounter with faith and culture students might otherwise not experience. Additionally, we envision the future of the program to include other medical colleges and health professions.

**References:**
- Ehman, J. W., Ott, B. B., Short, T. H., Ciampa, R. C., & Hansen-Flaschen, J. (1999). Do patients want physicians to inquire about their spiritual or religious beliefs if they become gravely ill? Archives of Internal Medicine, 159(15), 1803-1806.

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**Sutapa Khatua. Healthcare reform and future doctors**

Should medical students be made aware of the healthcare trends? Should it be included in their curriculum?

**Methods:** The US health care system is undergoing rapid evolution, with change in payment, organizational and management structures. There is serious concern that medical students are not being adequately prepared to provide optimal health care in the system where they will practice. Continuing rapid increase in costs have inflated healthcare industry to 3 trillion dollars. Average annual deductible for families has increased by 5% since 2016. One aspect of a physician is to be aware of and adapt to changes in policy and legislation. A multi-institutional collaborative study "Science of health care delivery (SHCD) as a first step to advance undergraduate medical education", sponsored by AMA Accelerating change in Medical Education Initiative, describe the challenges and strategies for success in implementing SHCD curricula.

**Results/Outcomes:** Physicians must be cognizant of the gaps and possess skills to address the gaps facing our health care system. The knowledge and expertise that are expected from a fresh medical graduate are immense- some areas of which are not included in the traditional medical curriculum. Health policy-structure and financing of US health care system, and care delivery- the ways in which this system is reflected in the organization and activities of health care providers- need to be addressed. The US health care system faces many gaps in quality, access, equity, efficiency and affordability, with an unprecedented number of people experiencing multiple chronic conditions and wide variation in health outcomes. SHCD collaborative study highlights the importance of multi-institutional partnerships to accelerate innovation and adaptation of curricula.

**Discussion:** Curriculum reform can be challenging. But the future physicians need to be acquainted with health care system overview, population based care, quality measurement and improvement, preventive care, and practice management. Studies have shown the importance of involvement of multiple institutions to facilitate introduction and adaptation of new curricula to better prepare our future caretakers for embarking on their journey. In one study where the next generation of
physicians were trained to become leaders in healthcare management showed how students found the training to be beneficial by developing professional skills and foster knowledge about healthcare management. 5
References:

Latashia Kiel. Understanding the Changing Faces of Colon Cancer For Cheeks' Sake

For years, colon cancer has been viewed as an old person's disease. But, for the last decade this common adage has been challenged. Recently, the American Cancer Society (Siegel, et al. 2017), released data from an ongoing surveillance study conducted by the National Cancer Institute's Surveillance, Epidemiology, and End Results program that showed that, among adults aged <50 years, colorectal cancer incidence and death rates increased by 22% and 13%, respectively from 2000 to 2014. Rebecca Siegel, MPH, Strategic Director of Surveillance Information Services in the Intramural Research Department at the American Cancer Society, reports, “Our finding that colorectal cancer risk for millennials has escalated back to the level of those born in the late 1800s is very sobering” (Simon, 2017). There has been a huge movement in the last decade to increase awareness of treatments, screening, and prevention methods for colon cancer for people approaching the age of fifty—so much so, that colon cancer has been dubbed the most beatable, treatable, preventable cancer. How then, are we failing our younger counterparts in diagnosing, treating, and management of this disease?
Methods: One unique method to address these issues is in creation of The Kids Kieling* Colon Cancer project that uses an interactive, educational approach to teach children about digestive health, exercise, and colon cancer including screening. If children learn about colon cancer and take this newfound knowledge to their parents, we should be able to improve outcomes for two different age groups.

Results/Outcomes:
1. Young people are tuned in to the messages that are delivered regarding colon cancer if they are communicated to them in their “language.”
2. Young adults are uncomfortable when it comes to talking about bowels, cancer genetics, and screening.
3. Young adults with colorectal cancer symptoms are being seen by primary care physicians, emergency room doctors, and urgent care clinics, but colon cancer is not being considered in their differential diagnosis.
4. Parents are not discussing colon cancer history with their children.

Discussion: How do we as health care educators thread this important data into our teaching curriculums? Do we continue to wait for an aging class, or for someone passionate about the topic to create a continuing education course, or wait until the statistics are so devastating that we have no choice but to act? We owe the patients we care for, their families, and the community REAL preventative care. The time for CHANGE is now.

References:

Thomas King, Erin L. Nelson, Ramaswamy Sharma Connecting the Dots: morphing-based animation of cervical pathology for medical students

In the U.S. cervical cancer is the 3rd most common gynecologic cancer, resulting in approximately 4,000 deaths per year. Preventative screening of women will be a part of the future clinical practices of many of our medical students. Thus, microscopic examination of the normal cervix as well as of cervical squamous cell carcinomas and precursors is an important component of histopathology teaching laboratories. Currently students examine the normal cervical structure and transformation zone within which most cervical squamous cell carcinomas arise. Presentation of these topics can be incongruous in the sense that normal and abnormal are taught sequentially but as separate topics and in 2-dimensional formats (i.e., histopathology micrographs). It is all too often incumbent on the student to “connect the dots”, conceptualizing how we get from the normal exocervix to metaplasia, dysplasia and ultimately neoplasia within the transformation zone. Visualization of this process is not always well-understood by these students. The primary goal of this project was to create a short, concise animation video covering formation and clinical significance of the cervical transformation zone using morphing technology. A secondary goal was to illustrate the clinical application of this information as used in colposcopy.
Methods: We have developed a short video utilizing a series of 3-dimensional animated drawings together with digitized microscopic images of the normal exocervix morphing through eversion and development of the transformation zone (squamous metaplasia).

Results/Outcomes: In the initial context of a clinic-based colposcopic examination, the video illustrates formation of the transformation zone and continues through human papillomavirus-associated dysplastic and neoplastic development. Histopathologic micrographs are interspersed as examples of various disease stages illustrated by the animated drawings. The video includes colposcopic images of the transformation zone, demonstrating the gross appearance of ectropion as well as dysplastic and neoplastic alterations in the exocervical surface. The animated and morphing video output was created in MP4 format, compatible with both PC and Mac computers.

Discussion: This program will allow the student to more easily and comprehensively understand the clinical significance of the cervical transformation zone. We are in the process of gathering data to evaluate the effectiveness of this video over a two-year period. The cohorts will include second year students (Fall 2017) who have not had access to this program and second year students the following academic year (Fall 2018) who will use this platform as an integral component of the Histopathology Teaching Laboratories at our institution.

References:

Rohan Manickam, Kimberley Brown, Saagar Patel, Manickam Kumaravel. Early exposure to Radiology for High School Students - Does it work?

The intention of the radiology exposure education program is to
- Create an introduction to radiology through a week long course aimed specifically at high school students (senior year)
- Devises a method for measuring effectiveness of the program
- Assess the feasibility of teaching this methodology for various audiences in different institutions at various knowledge levels

Methods: Discussions were held with the local public Independent School District, which had an interest in health professional education, with regard to the exposure of high school students to a short week to radiology in an outpatient department.

The existing knowledge of basics of radiology in high school students was assessed, prior to exposure to the radiology department using a standardized questionnaire.

Subsequent evaluation was to be performed at the end of the week, using the standardized questionnaire. This was performed after the students had a total of six hours of exposure to the various sections in the radiology outpatient department.

The students were exposed to the basic functions and concepts of radiography, ultrasound, CT (Computerized Tomography), nuclear medicine and MRI (Magnetic Resonance Imaging).

Pre- and post- exposure assessments of basic knowledge were conducted with standardized questionnaires. These questionnaires were evaluated for the efficacy of the program.

Results: Evaluation of the radiology exposure week was performed by:
- Standardized questionnaire administered to 24 participating students
  - Average improvement following course: 36%
  - Pre-test standard deviation: 26.8%; Post-test standard deviation: 10%
  - Pre-test standard error mean: 5.5; Post-test standard error mean: 2.0
- Statistical analysis between pre- and post-test had a p-value <0.00001

Discussion: Short focused radiology education programs are useful and effective in educating high school students to the fundamental concepts in radiology.

It is possible to propagate this method of short exposure education to other centers using videos and templates. The biggest gain from such an exposure was to raise awareness among high school students with regard to a specialty called "Radiology", which most of them were not aware of. It also spurred an interest in a significant number of high school students to pursue medicine, and possibly a career in radiology.
Saagar Patel, Kimberley Brown, Manickam Kumaravel. **Benefits of Dedicated Ultrasound Exposure for Medical Students - A 3 year experience**

The intention of the ultrasound education program was to:
- Create an intensive ultrasound curriculum by designing a program of dedicated exposure to ultrasound aimed specifically at second year medical students.
- Devise a method for measuring effectiveness of the program
- Assess the feasibility of teaching this methodology for various audiences in different institutions

**Methods:**
- Analyze existing ultrasound training for medical students.
- Evaluate current status and gaps in instruction of ultrasound education.
- A curriculum for 2nd year medical students in ultrasound education at our institution including instrumentation, anatomy, and ultrasound guided interventional procedures using phantoms was created
- Pre- and post- exposure radiology / ultrasound week assessments of skills and knowledge was performed with standardized questionnaire and hands on competition
- Program overview of Ultrasound Immersion Week included
  - Hands on education of various systems using multiple ultrasound units and students divided into small groups. Radiology resident educators to guide
  - Ultrasound guided intervention using homemade phantoms
  - Medical student ultrasound skills competition
  - Medical student standardized questionnaire - pre and post week evaluation
  - Medical student & resident satisfaction surveys
- Creation of low-cost homemade phantom models to demonstrate ultrasound guided interventional procedures

**Results\Outcomes:**
Evaluation of the ultrasound exposure week was performed by Standardized questionnaire administered to all second year medical students.
- Year 1: 19% average improvement
- Year 2: 19% average improvement
- Year 3: 39% average improvement
- Year 1 Pre vs. Year 2 Post: Fisher's exact test p-value <0.0001 (comparing the distribution of the scores between two groups); two sample t-test p-value <0.0001 (comparing the mean score between two groups).
- Year 2 Pre vs. Year 1 Post : Fisher's exact test p-value <0.0001 (comparing the distribution of the scores between two groups); two sample t-test p-value <0.0001 (comparing the mean score between two groups).

**Discussion:**
- Short focused ultrasound education programs are useful and effective in educating second year medical students
- Standardized questionnaire demonstrates that it is possible to have a significant impact in the knowledge obtained by the medical students by the week of ultrasound education
- Using homemade phantoms it is possible to educate Second year medical students effectively and keep them engaged.
- It is possible to propagate this method of education to other centers using videos and the pictures as visual aids

Yui-Wing Francis Lam. **Problem-Based Group Learning and Online Assessment Tool for Pharmacology**

Self-testing, as a form of formative assessment, provides an opportunity for students to identify areas of weakness and develop skills related to self-directed learning. The study evaluated the impact of combined approach of group discussion and online testing on students' confidence, perceived readiness for examinations, and their examination performance. The hypotheses are group discussion and quiz positively affect students' learning and understanding, as well as improve their performance on subsequent examination.

**Methods:** Problem-based learning exercises reflecting material taught during lecture were first placed online and then subsequently presented in interactive sessions throughout the course. For each session students worked on the problems with group of peers, with opportunity to clarify concepts and understanding with peers and/or faculty. To maximize learning
benefit, students were allowed to use class notes and other resources. At the end of each problem-based learning session, each student took a quiz, which is optional. The quizzes were similar in format to that of examinations. Performance data from each quiz and examination were collected, and included average class performance, individual student score, and percent of students answering each question correctly. At the conclusion of the course, students were given a voluntary survey at the end of the course for their perspective on utility and success of this learning approach.

**Results/Outcomes:** All students took at least one quiz over the course of the semester. Quiz and examination averages ranged from 59% to 83% and 81% to 89%, respectively. Improvement in scores from corresponding quiz to examination ranged from 7 to 41%. Students participating in the assessment process performed better on subsequent examinations than those who opted not to attend the sessions. Most students had higher percentage scores on examinations compared to the corresponding quizzes. Survey results suggest overall satisfaction with this learning approach, and commented that the process increased their understanding, confidence, and ultimately examination performance.

**Discussion:** The primary objective of each interactive session is to correct misconceptions regarding the materials covered and help students identify areas for focus and/or further learning. The group learning among student peers provides an environment that allows students feeling more comfortable to ask questions, which in turn afford the students to help one another identify areas of difficulty from student’s perspective as well as reinforce their understanding of the material. Overall, the assessments were beneficial to examination performance by students, and their confidence and own perception of performance for each subsequent examination.

**References:**

- Philip F. Lavere, Harold S. Pine, Karen Szauter. Fostering Medical Student Interest in Otolaryngology through Early Interactive Workshop Exposure: A Model for Medical Education.

Our ENT surgery department hosts an interactive workshop to teach first year medical students the head, eyes, ears, nose and throat (HEENT) physical examinations. Introduced in 2010, the workshop happens early fall, prior to the objective structured clinical examination (OSCE) for first year medical student s. We describe the workshop and report potential outcomes on student satisfaction and performance.

**Methods:** The 2-hour workshop, facilitated by ENT residents and faculty, has five stations (ears, cranial nerves, larynx, nose, head and neck). Questionnaires soliciting student feedback are administered at the end of each session. Overall outcomes of interest include: (1) The number of people who sign up for the ENT surgery interest group; (2) workshop evaluations (including qualitative and quantitative measures); (3) student perceived preparedness for their upcoming HEENT OSCE station; (4) trends in OSCE performance across multiple years.

**Results/Outcomes:** In 2017, 219 students submitted feedback. 37% of students (n = 81) signed up for involvement in the ENT interest group. The average overall workshop rating was 4.95 out of 5 (n = 219). 97% of students (n = 212) felt that HEENT OSCE objectives were fully explained, and when asked about the best part of the workshop, 74.5%(n = 164) cited "interactive/hands-on" in their response. Trends in OSCE scores over many years showed little variation with a mean HEENT score of 92.5%.

**Discussion:** The ENT workshop utilizes interactive models, demonstrations, and instruments to teach skills and concepts in ENT surgery. Major benefits include students interacting with real equipment, utilizing hands-on learning, and meeting surgeons who share anecdotes and reasons for choosing their field, which engages students meaningfully and memorably, as evidenced by the interest group signup lists and overall workshop rating. The vast majority of students left the workshop feeling prepared for the HEENT OSCE station. Learning HEENT physical exam skills with the added benefit of interacting with equipment and members of the field engages young student s, and may serve as a model for other specialties to teach their respective physical exam skills in a hands-on and in well-received way.

**References:**


Philip F. Lavere, Harold S. Pine, Karen Szauter. Fostering Medical Student Interest in Otolaryngology through Early Interactive Workshop Exposure: A Model for Medical Education.
Li Chen Lin, Julie Zuniga, Oanh Mai. Discharge Medication Teaching: Using Teach-back to Increase Patient/Family’s Understanding of Medication

At discharge, patients are given instruction on their medications and the side effects of those medications. Along with medication education, patients in rehabilitation settings also receive additional information on exercise programs, follow-up appointments, and activity or diet restrictions. For nurses to teach patients/families on their medications can be challenging given the time constraints. The purpose of this project was to test the feasibility a medication-teaching packet using the ‘teach-back’ method to improve patients/families’ understanding of medications and their comfort level of managing their medications and potential side effects.

**Methods:** In order to address time constraints and standardize teaching, a teaching packet template was created with the input of 7 nurses who work on the rehabilitation unit. The medication information from Clinical Pharmacology was modified based on the nurses’ suggestions for teaching handouts, such as large font, patient-friendly languages. Each packet contains a list of current medications and medication sheets with essential information and a signature line for the nurse who starts teaching and the nurse who verifies learning mastery. The packet was created within 5 days of rehabilitation admission, then delivered to the primary nurse to initiate the teaching. Teaching was done throughout rehabilitation stay with 2-4 medication sheets per interaction. Nurses were encouraged to invite their patients to answer 5 simple questions on how they plan to manage their medications once discharged.

**Results/Outcomes:** To date, 14 teaching packets have been created since September, 2017 with nine of them been initiated. The rehabilitation nurses stated that the teaching packets have been very helpful by having more time to teach and allow ample time to address questions. One barrier reported by the nurses is not knowing the exact medications that will be prescribed at discharge. Patients were able to verbalize purpose of medications but needed reinforcement on side effects. One patient who is visually impaired was able to read the large-print teaching materials and demonstrated understanding on 5 out of 6 medications after the teaching project.

**Discussion:** Having pre-made teaching packets for nurses could be beneficial for both patients/families and nurses to facilitate medication teaching throughout the rehabilitation stay. Nurses could have more time to teach and utilize ‘teach-back’ method to assess/evaluate patients/families understanding. Patients/families could have time to review the handouts and ask provider questions prior to discharge to prevent misunderstanding and potential adverse outcomes from medication.

**References:**

Michael Miller. Diagnostic Appreciation: Understanding the Origins and Meaning of Diagnosis for the Patient

Medical students are taught criteria for diagnosis, but not taught to consider the etiology of these criteria, nor the repercussions of the diagnosis for the patient (personal, financial, sociocultural). I aim to teach medical students to consider these factors when assessing a patient to form a mature, deep diagnosis grounded in both empathy and accuracy.

**Methods:** I created a post-clerkship psychiatry elective in which MS3s and MS4s spend one month exploring diagnosis. The student follows me in hospital and clinic, then selects a patient whose diagnosis interests them. They thoroughly research the chart, interview the patient, and obtain collateral. After research, they prepare and present a peer case conference, focusing on a biopsychosocial model alongside a clinically relevant educational objective. The student further researches the diagnosis and prepares an essay about the patient and their diagnosis for an in-house history of psychiatry essay contest. The essay is then modified and sent to an appropriate scholarly journal.

**Results/Outcomes:** In progress: several students have enrolled, and the first student is enjoying his time and feels he is gaining an appreciation of the patient and diagnostic ramifications that he would not have had otherwise. Results will be updated with formal feedback quiz results.

**Discussion:** This elective targets students’ appreciation of diagnosis and the history and ramifications tied to it as they enter residency and gain the ability to diagnose patients, along side an increased knowledge of the publication process. The goal is to promote thoughtful diagnoses and empathy for their ramifications for the patient.

**References:** American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.)
As the largest comprehensive cancer center in the word, The University of Texas MD Anderson Cancer Center (MDACC) is responsible for training the next generation of world leaders in cancer care. Uniquely MDACC is independent from a medical school; the focus of education is therefore shifted towards more advanced learners. For these professional, additional skills and knowledge must be constantly acquired, even after completion of official training. The existing models of continuing education are heterogeneous, based on field of practice, and have variable impact on performance. (1) Thus, the development of non-clinical skills for healthcare educators, who serve as the front line in the experiential advanced training setting, is essential.

**Project Description:** Survey data gathered by the Department of Clinical Education at MDACC identified no existing structured inter-professional educator development programs offered internally; these results were a call to action. In order to meet the identified needs the Educator Professional Development Group (EPDG), an interdisciplinary working group, was formed. The workgroup's mission is to provide curricula, resources, and opportunities to develop and enhance the competencies of clinical educators across disciplines at MDACC via a 3-tiered approach designed for: (1) all clinicians and trainees (2) core educators; and (3) educational leaders and scholars. Implementing such a curriculum for clinical educators across specialties aims to not only prepare healthcare educators to be more effective leaders and teachers, but also provide essential inter-professional education. This is central to the unique mission of a comprehensive cancer center and was reinforced in the 2016 retreat survey and focus group outcomes.

**Results\Outcomes:** The EDPG has formed three working subgroups to aid in curriculum development, communication, and sustainability. In its first year the EDPG successfully added three GME trainee members, identified educational competences for the three tiers of learners outlined above, and selected the top 3 topics for professional development. Moreover, the EDPG is actively developing a curriculum tailored to the Tier 1 learners based on the highest rated needs from an assessment survey.

**Discussion:** This innovative curriculum devoted to the development and preparation of medical educators will not only address the unique educational needs of a comprehensive cancer centers, but also will demonstrate the importance and the impact that collaborative inter-professional education can have on the next generation of national leaders in health professionals education. Our team structure allows the curriculum developers (i.e.- out team members) to work and learn together (itself a form of IPE) facilitating development of future leaders.


**Emma Omoruyi, Amalia Guardiola, Lina Ha, A. Vanessa Agwu, Michelle S Barratt. Are incoming pediatric interns ready to document informed consent?**

A lumbar puncture (LP) is one of the most common procedures consented for in general pediatrics with over 90% of pediatric residents surveyed have obtained consent for lumbar puncture. Incomplete consents can delay important therapies. In 2013, the Association of American Medical Colleges created the "Core Entrustable Professional Activities (EPAs) for Entering Residency "as a way to more clearly define the set of activities that entering residents should be expected (entrusted) to perform on day one of residency without direct supervision.” One of the EPAs is obtaining informed consent for tests and/or procedure. This EPA acknowledges that an entrustable learner should be able to complete a "comprehensive" and accurate informed consent. The aim of this study is to explore if incoming pediatric interns demonstrate one of the behaviors of an "entrustable learner" as defined by the AAMC in the domain of obtaining informed consent for a common pediatric procedure. Using this information can inform future curriculum development in this area.

**Methods:** At McGovern Medical School, all incoming pediatric interns completed a series of observed standardized clinical encounters during residency orientation. One of the scenarios involves obtaining parental consent for a lumbar puncture from a standardized parent whose child has suspected meningitis. The resident is then tasked with accurately completing a consent form for the procedure that documents the risks. During the study period (2007-2017), there were approximately 258 pediatric interns who participated in the scenario. 86 medical schools were represented in the sample. The researchers determined and agreed what components would be important for a complete and accurate consent. The necessary items were based on a literature review and consensus panel. A retrospective review of the resident’s informed consents occurred looking for components documented.
Results\Outcomes: Of the 258 consents reviewed, 8 were completely and accurately completed. Incoming interns proved to be skilled when completing the basics of the informed consent form such as filling out their name at the top, getting the patient’s signature and correctly identifying the procedure. However, detailing all the risks of the LP were areas that they did not demonstrate their proficiency.

Discussion: Documenting risk involved in the procedure proved to be the biggest issue, especially as the negative perception of the risk increased. Incoming residents struggled to document all risks involved with a lumbar puncture. This is an important skill that should be taught and reviewed in medical school prior to residency.

Nicole Osier. Rookie mistakes: Lessons learned during the first 60 days as a faculty member

The transition from postdoctoral fellow to faculty member is an exciting and hectic time. In addition to knowledge of the subject content and confidence in teaching ability, there are a number of other factors that impact effective teaching. This project provides a real-world description of a new faculty member’s transition to teaching Genetics in Healthcare at University of Texas (UT) at Austin; rookie mistakes and subsequent lessons learned will be emphasized.

Methods: The author taught her first class at UT Austin on 2017-08-31. Going into the classroom she felt largely confident and competent, having been the teaching assistant for a class with the same content for 10 semesters, and having also taken a full-semester teaching class that included 150 practicum hours. However, during the first 60 days in her new role, several barriers to effective teaching were identified and addressed, as outlined below.

Results\Outcomes: Over-estimation of student background knowledge and self-efficacy regarding the subject matter was the first rookie mistake. Fortunately, this was identified early, when students participated in a nation-wide needs assessment evaluating genomics-competence among nurses. A strategic remediation plan was developed and executed to reinforce key content and plans were laid to create a pre-course module of foundational content for the following semester. The second rookie mistake was lack of familiarity with the course-management website (Canvas) leading to miss- and under-utilization of this resource. Changes made included: better integration of assignments into the Canvas platform to facilitate ease of grading and embedding important attachments that reduced the time and effort spent updating and re-uploading files. Finally, a need to better engage students in online content was identified, leading to the exploration and integration of web-based tools to assess student understanding that could be used to revise lesson plans as needed.

Discussion: The transition to a tenure-track faculty role is an exciting but challenging time. Competing responsibilities and a lack of familiarity with institutional teaching tools lead the author to make several rookie mistakes and subsequently develop a set of solutions. The lessons learned by the author may help other new faculty transition to their teaching role.


The use of trained standardized patients (TSPs) is ubiquitous in medical training with many positive outcomes studied and reported, but they are underutilized in dental education. In this study, students participated in two simulated scenarios using TSPs, intended to replicate a nursing home rotation. The primary goal of this study was to determine the effect if any, the experience would have on student confidence level when interacting with geriatric patients in a nursing home setting. The secondary goal was to establish a baseline for student communication skills and empathy to better develop objectives and curriculum content to teach humanistic skills in the dental curriculum more effectively.

Methods: Second-year dental students enrolled in the off-campus nursing home rotation at the University of Texas School of Dentistry at Houston (UTSD) were invited to voluntarily participate (n=75) as the control group (G1). First-year dental students were also invited to voluntarily participate (n=50) as the intervention group (G2). All first-year students who participated rotated through two scenarios with standardized elderly patients, in the summer before beginning the actual nursing home rotation. For G1, an online survey tool (Qualtrics) was utilized to distribute a confidence level survey at two points, pre- and post-rotation. G2 completed the same survey at three points: pre-simulation, post-simulation, and post-nursing home rotation. During the exercise, G2 participants received individual feedback on their communication skills and empathy level from two calibrated faculty and both TSPs (guided by a Patient Satisfaction Questionnaire). Upon completion, G2 also submitted a self-reflection questionnaire. A group debriefing session was held five weeks post-simulation/pre-rotation where they completed a student feedback form.

Results\Outcomes: Using the general linear models procedure, the results showed at the p<0.001 level that the intervention group self-perceived performance (survey scores) was superior to that of the control group. Additionally, the intervention
group continued to improve up to and through the post nursing home rotation. Taken together, the intervention process appears to enhance student confidence.

**Discussion:** In this project, we studied the use of TSPs to increase the level of dental students' humanistic skills in interacting with geriatric dental patients. A vast amount of data was and is still being collected. Initial results support that simulation of interactions with geriatric patients can increase clinical confidence in students. Further analysis may identify common communication pitfalls, create standardized communication competencies, and inform the design of future TSP simulations as a component of UTSD's evolving humanism curriculum.

**References:**

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**Premal Patel, Caley Satterfield, Matthew Dacso. Moving Beyond Cultural Competence to Cultural Humility in Global Health Training: The Bafa Bafa Experience at the University of Texas Medical Branch**

The emerging consensus in the global health literature has shifted away from the concept of cultural competence to one of cultural humility. Cultural competence, once the dominant model for understanding cultural diversity, falls short of encompassing the lifelong and self-reflective approach captured by cultural humility. Instead of skills to hone and master, cultural humility is a particular approach and open mindset. At the University of Texas Medical Branch (UTMB), the Center for Global Health Education (CGHE) in 2016 piloted the use of the Bafa Bafa simulation training for first year global health medical students as one part of our pre-departure preparation requirements.

**Methods:** Bafa Bafa is a simulation game initially developed for cross culture and diversity training in the business world but has been applied to school, education, leadership and organizational settings. The 2 day simulation exposes learners to the values, norms, rules, language and nuances of being immersed in another culture and the misunderstandings that can result from assumptions and miscommunication.

The simulation and subsequent debriefing highlights the following themes:
- Building awareness of cultural differences and the consequences of their impact
- Reflecting on how attitudes, biases and stereotypes are formed
- Encouraging the cultural humility approach

**Results/Outcomes:** Thirty-two students completed anonymous surveys on their Bafa Bafa simulation experience with a response rate of 100%. 97% clearly understood the purpose and objectives of the exercise; 100% of students felt the format was actively engaging, provided a safe learning environment and allowed everyone to participate. 100% stated the debriefing discussion was constructive and they now have a better understanding of how easily cultural misunderstandings can occur. 97% noted an increased perspective on the influence of culture and would recommend the exercise be continued for the next cohort of students. 100% of students felt the experience and discussion will help them during their global health elective experience. Only about 18% of students reported that they would have preferred to learning about cross-cultural interactions from a traditional lecture format.

**Discussion:** Overall, the Bafa Bafa exercise has been successful with positive feedback from students. Next year, we will clearly define the disconnect between cultural competency and humility and incorporate more reflective exercises. Moreover, an essential ingredient to understanding the effectiveness of the exercise will be to obtain feedback from our on-the-ground host collaborators.

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**Judith Rowen, Christine Ford, Premal Patel. Treatment Adherence: An Experiential Workshop for Students**

Medical students are generally young and healthy and have not struggled with complex treatment regimens and do not readily relate to the issues their patients encounter with adherence. We sought to develop a workshop to help our students be more compassionate about treatment adherence.

**Methods:** The Treatment Adherence workshop was designed as part of a series for UTMB SOM Student Continuity of Practice Experience (SCOPE) year 1 and 2 students. The workshop is outlined below:
1. Pre-reading - students selected a unique article (posted in BlackBoard) addressing adherence. The students were told to be prepared to discuss barriers and aids to adherence discussed in the paper. 2. Pre-workshop experience - each student received a packet with a week-long "prescription" of different colored "medications" (candy purchased from Oriental Trading), "inhalers" (straws) and a glucose log (marked with an inky finger). Instructions for amount, frequency and special precautions were provided. Some students had problems with their prescriptions requiring refill requests, new prescriptions or insurance pre-authorization - these were handled by email only during business hours. 3 Reporting of adherence using audience response questions. 4. Students volunteered barriers they encountered to adherence. 5. Reading presentation - students reported barriers and aids from their assigned paper. 6. Discussion of adherence - slides from the CDC were reviewed. 7. Cases discussed in small groups to apply the material. Cases were drawn from the authors' experience and from a toolkit from the American Association of Colleges of Pharmacy. 8. Students reported "one thing I learned about adherence"; list compiled Workgroup length: 2h

**Results/Outcomes:** The workshop has been offered three times, with groups ranging from 8-60. Each time it ran the full 2h. Each time, students have had very low reported adherence, with only 11% reporting full adherence with the "medication" and 79% admitting to "fudging" data on their glucose logs. Students are very engaged during the workshop and report learning meaningful concepts, from understanding the difference between adherence and compliance, the impact of social determinants on adherence and the system barriers that inhibit adherence. 100% of students reported that they anticipated applying principles from the workshop to clinical practice. One representative comment: "This workshop gave me great insight into barriers to adherence. I can never judge a patient for non-adherence after seeing how hard it is."

**Discussion:** This experiential workshop opens students' eyes to their patients' struggles. Further exploration of the impact on subsequent patient care activities should be undertaken.

**References:**


Many trainees embarking on global health experiences wish to participate in research or short-term studies. LMIC trainees seek to increase their own research skills. Educators at the University of Texas Medical Branch (UTMB) and the University of Cincinnati College of Medicine (UC) collaborated on a multi-institutional study of the efficacy of four research skills training modules created by UTMB. The modules include topics on 1) developing a research question, 2) conducting a literature search using electronic databases, 3) ethics and challenges in international research, and 4) abstract and poster development. These modules align with published Global Health trainee research competencies². This presentation will include discussion of the research skills modules, multi-institutional study results, module alignment with proposed competencies, and development of future training resources.

**Methods:** UTMB (n=68) and UC (n=18) students completed pre- and post-module surveys. Matched pair’s t-tests were used to determine trainees' self-perceived confidence on the above-described skills at a 95% confidence interval.

**Results/Outcomes:** Both UC and UTMB students showed statistically significant increases in confidence on all measured skills. Specifically, confidence in developing a research question (UC p=.001; UTMB p=.001), conducting a literature review (UC p=.001; UTMB p=.001), identifying study designs (UC p=.001, UTMB p=.001), and identifying limitations of study designs (UC p=.004; UTMB p=.001) increased. Additionally, student confidence increased in identifying the role of ethics (UC p=.023; UTMB p=.001), challenges for research in resource-limited settings (UC p=.003; UTMB p=.001), abstract development (UC p=.001; UTMB p=.001), and poster development (UC p=.013; UTMB p=.001).

**Discussion:** Results from this study and feedback from both High Income Country (HIC) and Low and Middle Income (LMIC) trainees have provided evidence of the efficacy of this training modality and the potential utility of additional modules on literature reviews, case reports, quality improvement projects, additional ethical considerations in global health research, and publishing guidelines. Current and proposed modules are linked to identified global health research competencies and may better prepare HIC institution students for global health research and assist with building LMIC research capacity.

**References:**
Persons with disabilities (PWDs) often encounter physical and attitudinal obstacles when attempting to access healthcare. Inadequately trained providers have been reported as a significant barrier to care. Their behaviors frequently prevent PWDs from seeking and/or receiving necessary services. Literature suggests educational interventions and training can reduce this disparity.\(^3\) Our goal was to determine if curricular enhancements are needed to ensure medical students are prepared to provide quality care to patients with disabilities. Specifically, we asked, do students respectfully acknowledge a patient’s disability when the disability is not the primary reason for the encounter?

**Methods:** We studied fourth year medical students’ interactions with a disabled patient during a standardized patient-based clinical skills assessment. Two existing cases were revised to include background information related to the patient's disability. The encounter began with the patient sitting in a wheelchair. A checklist of key behaviors representing respectful care of PWDs was developed. Investigators viewed and scored randomly selected archived recordings of the encounters. Videos were excluded if SP’s portrayal of the disability did not meet training standards. Analyses included frequencies of checklist items. A global disability competency was calculated for each student. The global rating was correlated to other performance parameters using Spearman’s rho. Mean content scores for the cases (original and modified versions) were calculated and examined for trends in performance over a five-year period.

**Results or Outcomes:** We reviewed 125 videos. Only 36(29%) students directly asked about the disability or wheelchair. While 95(76%) performed the physical exam on the exam table, only 50(40%) asked the patient if he needed assistance to transfer. Global disability competency ratings were 25%(31) competent, 54%(68) marginal, and 21%(26) unsatisfactory. Global disability competency was associated with overall exam performance scores for Interpersonal Skills (\(r=.22, p=.016\)) and Content (\(r=.296, p=.001\)). Review of scores from study case revealed the global rating was associated with Interpersonal Skills (\(r=.217, p=.015\)) but not Content (\(r=.121, p=.177\)). Review of historical performance over a 5-year period revealed cases had lower mean content score following introduction of the disability.

**Discussion:** Currently, no curriculum exists at UTMB to ensure all students have opportunities to interact with PWDs. Our findings support both students and patients would benefit from implementation of instructional techniques designed to prepare students to care for this marginalized population.

**References:**

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**Amy Shanks, Karen Szauter, P. Darlene Self, Bill Boudreaux.** *Creating Self-Paced Videos to Streamline Standardized Patient Feedback Training*

A vital part of a standardized patient’s (SP) responsibility is to provide feedback to students. This is a rare and important opportunity for students to receive insight into their interpersonal skills from the perspective of a patient. Historically, verbal feedback during learning activities was the only form of feedback SPs provided directly to our students. In 2016, SPs began providing students with written feedback during high-stakes exams. The vetting of these responses prior to their release to students caused some concern, shedding light onto the need for more extensive SP feedback training. The focus of this presentation is to describe the development and early implementation of this process.

**Methods:** Our first approach was to embed more time for specific feedback instruction within case trainings. While this method was effective, it was not efficient. Time spent on feedback instruction, compounded by SPs’ varying experiences and skill levels, highlighted the need for streamlining feedback instruction. This need inspired the development of an innovative self-paced video module with differentiated instruction for the varying experience levels of our SPs. After identifying various SP skill levels at target and defining learning objectives, we scripted 3 vignettes for introducing beginner level SPs to feedback fundamentals and 3 vignettes with more challenging scenarios for intermediate to advanced level SPs. Each vignette included a student-patient interview and 1-2 examples of feedback for the encounter. A professional videographer was hired to film the vignettes. An introduction to the module highlighting feedback fundamentals was produced using a narrated PowerPoint presentation.

**Results\/Outcomes:** We are currently in the post-production phase of our project. Early feedback from SPs has been used to modify updates to the module. In addition, we are creating accompanying guidebook materials for learning and enrichment activities. We anticipate completion of the project by the end of the year.
Discussion: The importance of high quality feedback to advance learners’ skills cannot be overstated. SPs provide a unique perspective for feedback as their experience most closely resembles that of an actual patient. Just as preparing a SP to portray a patient role, ensuring that SPs have the skills to provide constructive feedback requires training, monitoring, and debriefing. Maximizing the efficiency of this training in a large and busy SP program requires innovation and tools for self-directed learning. We believe that this new video-training module will assist us in advancing feedback skills of our SPs.


Karen Szauter, Dawnelle Schatte. Medical Student Documentation of Patient’s Substance Use

Discussing substance use with patients is essential as tobacco, alcohol, and illicit drug use are major contributors to poor health. Medical students are trained to ask about substance use as part of the Social History and rigidly apply rules for questioning early in their medical training. As students mature, they are expected to recognize opportunities to identify problems with substance use, to discuss preventive health care opportunities, and to use motivational interviewing techniques to guide patients to healthy lifestyles. As part of a larger study looking at students’ ability to screen and counsel for substance use, we were interested in whether substance use history was included in students’ written documentation or oral presentations of patients.

Methods: After obtaining permission from the IRB and Curriculum Committee, archived educational materials from our senior medical student clinical skills examination (CSE) were obtained for study. The CSE is a multi-station standardized patient-based examination. Post encounter activities include documentation of patient information (patient note) or an oral presentation of the patient. We obtained the patient notes for seven scenarios and transcripts from the oral presentation of one. Data was extracted for the notation of patient use of tobacco, alcohol, and drugs, and when positive, details of the type, amount, and duration were recorded. Analysis included frequency of documentation across all cases, by student, and by case. We also assessed the accuracy of recorded/presented information.

Results/Outcomes: Patient notes for 772 encounters were reviewed; transcripts of oral presentations were available for 192 students. There was no mention of substance use in 119 (15.4%) patient notes and 13(%) oral presentations. Of the remaining notes, tobacco use was included in 641 (98.2%); alcohol was noted in 586 (89.7%) and drug use in 396 (60.6%). All student s included mention of substance use in at least one of their notes. Oral presentation of the patient included substance use for tobacco in 176 (98.3%), alcohol in 175 (97.8%) and drugs in 98 (54.7%). Accuracy of the documented details of substance use ranged from 83.3-98.8% across the scenarios.

Discussion: Despite known risks of comorbidity from substance use, students do not consistently report substance use details following patient encounters. Our findings raise concern about students’ willingness to address these topics with patients, especially drug use. Next steps in this work include review of the video-recordings of the actual patient encounters to determine student communication skills about substance with patients.

Karen Szauter, Lisa Elferink, Michael Ainsworth, Majka Woods, Ruth Levine, Judith Rowen Identification of At Risk Students

High stakes examinations used to assess the clinical skills of medical students result in detection of individuals with a variety of underlying deficits (knowledge, technical skills, interpersonal communication). The complexity of skill deficiencies makes early identification of at-risk students challenging. As part of a larger school-based initiative to identify predictors of at-risk students, we studied features of our year-3 formative Objective Structured Clinical Examination (F-OSCE) that might best identify students at risk for sub-optimal performance on our year-4 Clinical Skills Assessment (CSA).

Methods: The F-OSCE, a multi-station standardized patient (SP)-based examination, is administered at the mid-point of the year-3 clinical clerkships. The examination cases represent challenges reflective of clerkships the student has completed. Content checklists specific to each case, and an interpersonal skills checklist used uniformly across cases, are completed by SPs. Students receive written feedback on their performance by case and by skill (medical interview, physical examination, counseling, interpersonal) and an invitation to meet with faculty for performance review. The year-4 CSA is an eight-station exam; SPs score case content and interpersonal skills. A passing performance on the Year 4 examination is a graduation requirement.

We identified students with low counseling or interpersonal scores on the F-OSCE for elective intervention prior to the CSA. Students were contacted by email with instructions on how to complete an individualized learning plan (ILP) focused on
enhancing counseling and interpersonal interactions with patients. ILPs were distributed to faculty for review and student feedback. Subsequent performance on the CSA was recorded.

**Results/Outcomes:** Two hundred twelve students completed the F-OSCE; 61 (28.8%) students identified as at-risk were contacted, 36 (59.0%) submitted ILPs. One hundred eighty-nine students who participated in the F-OSCE also completed the CSA. Of student s not identified by the F-OSCE, 92.4% passed the CSA on their first attempt. Of those identified, 73.7% passed the CSA on the first attempt. Completion of an ILP did not predict a passing performance. We subsequently looked at F-OSCE case content scores as a potential predictor of CSA performance. No alignment between case scores and CSA performance was noted.

**Discussion:** Effective use of resources to aid at risk student s requires identification of such students early enough in training to make remediation worthwhile. In our experience, a formative OSCE can play a role in identifying such student s, but selecting productive remediation interventions remains a complex task.

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**Gayle Timmerman, Heather Cuevas. Use of Objective Structured Clinical Examinations in a Health Promotion Course for Advanced Practice Clinical Nurse Specialist Students**

The objective structured clinical examination (OSCE) has been used since the 1970's in medical education and is growing in use in nursing to assess clinical skills such as safe performance of procedures and accurate assessment.1.2.3.4 OSCEs and the use of standardized patients allow students to demonstrate competence (knows how) as well as performance (shows how).2 Few studies have used OSCEs to assess health promotion aspects of training and most are discipline-specific.3.4.5 The purpose of this project was to use the OSCE with a group of CNS students in a health promotion course in order to evaluate their ability to use motivational interviewing and to determine the usefulness of OSCEs for evaluating lifestyle change coaching competencies.

**Methods:** We developed and piloted 4 cases to use in the OSCE related to lifestyle change coaching: exercise, weight loss, stress reduction, or nonpharmacologic management of hyperlipidemia. Student evaluation criteria included: (1) general approach to the patient; (2) information gathering; (3) motivational interviewing; and (4) management including medical and behavioral strategies and jointly set SMART goals. Instructors played the role of the standardized patient. Students had 5 minutes to review the case/chart, 15 minutes for interaction, and 10 minutes for debriefing on their performance.

**Results/Outcomes:** Student performance ranged from highly organized and proficient to less organized and focused solely on clinical management. Most students were adept at gathering clinical information and coming up with a plan. However, some students neglected to partner with the patient for planning despite having instructions to develop SMART goals with the patient. Motivational interviewing skills were demonstrated with varying degrees of success, indicating on going practice is needed.

**Discussion:** Faculty gained valuable insight on students' coaching competencies and application of course content. Audio-taping the OSCE provides the opportunity for students to reflect on their performance. Using OSCEs earlier in the semester to provide students' feedback on their performance and again at the end to determine improvement can optimize use of this teaching strategy.

**References:**


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**Maria Teresa Urioste, Victoria Valencia, Alejandro Moreno. Factors Predicting Interview and Match in Internal Medicine Residency in University Medical Center Brackenridge**

Residency candidates spend significant amount of resources during the annual recruitment season. During 2013, 4th year medical students spent approximately $83.6 million dollars. Each candidate spent on average about $2,225.00 (range: $80.00-7,000.00). Programs also spend considerable amounts of resources. Our program, for instance, spends on average $70,000 per season.
The study is a retrospective review of the internal medicine residency program administrative record collected during the recruitment seasons for academic years 2009-2010, 2011-2012, 2012-2013, 2014-2015, and 2015-2016 (no data available from 2010-2011).

**Methods:** The administrative record contains the ERAS application, interview notes from two faculty members, and the residency ranking tool, an instrument used by all faculty members when interviewing candidates. That contains 17 variables (date of last clinical experience, medical school, US clinical experience, USMLE scores, academic standing, letter of recommendation, communication skills, personal statement, motivation to be in Austin, visa status, overall impression, leave of absence, failed course, issues with professionalism, connection to Texas, carrier goals and professional achievements). The weigh given to each variable was determined by faculty consensus. We examined the distribution of all variables and present them in terms of means, medians, proportions and Chi-square. Analyses also included descriptive statistics for each variable as well as regression analyses for pattern recognition and logistic (and multiple linear) regression for selected outcomes and potential predictors. The study was approved by the IRB.

**Results/Outcomes:** A total of 3,102 applicants were ranked between 2009 and 2016 of which 228 (7%) matched. Of all applicants, 78.1% applied to the categorical program, 98.2% were US citizens/green card holders, and 73% were US medical school graduates. The variables that predicted matching were US clinical experience (p 0.001), better communication skills (p 0.046), greater motivation to be in Austin (p < 0.001) and lower USMLE scores (p 0.003).

**Discussion:** Our study demonstrates that the factors predicting matching to our program are US clinical experience (p 0.001), greater motivation to be in Austin (p < 0.001) and USMLE scores between 214 and 227 (p 0.001). Our study results differ from the other studies in internal medicine and other programs in surgery, pediatrics and emergency medicine which found only the interview as the single most important selection variable.

- Victoria Valencia, Christopher Moriates, Sara Stamets, Elizabeth Nelson, Susan Cox. **Discovering Value-Based Health Care: Interactive, Adaptive Learning Modules for Medical Trainees**

Medical education leaders and policy makers have identified "high-value, cost-conscious care" as a critical deficiency in health professional training. As of 2013, only 15% of internal medicine residency programs reported they had any curricula related to costs or value, with many lacking local faculty expertise and time in the curriculum.

One strategy for addressing these challenges on a national scale is to introduce on-demand educational tools that can be accessed independently and incorporated across different educational settings.

**Methods:** In June 2017, Dell Medical School at The University of Texas at Austin released the first set of interactive, adaptive online learning modules, "Discovering Value-Based Health Care," which aim to teach the basic foundation of value-based health care to medical learners at any stage of training across the US (www.vbhc.dellmed.utexas.edu).

The learning content is presented through transmedia formats, including text, pictures, animations, videos, quiz questions, and activities. Each module includes a "Care Redesign Case" study about an institution or tool that has already successfully been implemented. The modules provide supplementary materials to allow students to "dive deeper" on specific topics and to connect with national organizations.

Learners can complete the modules independently, without the need for dedicated classroom time nor faculty mentorship. We have also found that working through the modules in a group workshop format with discussion questions works well.

**Results/Outcomes:** As of October 2017 (4 months after launch), the Discovering VBHC module website had received 15,150 page views, by 2,068 unique users, with 635 registered users, representing 42 of 50 states in the US, and 7 foreign countries. Thus far, 151 learners completed all three modules and completed our assessment survey. The vast majority of learners were satisfied with the modules overall (139; 92%), and 133 (88%) users indicated they were likely to recommend the modules to a friend. The majority of users also agreed they could define (97%) and provide examples of value in health care (97%).

A number of residency and medical school programs have now assigned these modules as mandatory for their learners, including the national High Value Practice Academic "Future leaders" program, which currently includes 82 resident and fellow physicians.

**Discussion:** We have developed a unique, user-friendly, and scalable method for teaching the concepts of health care value. Our modules have received overwhelmingly positive responses from learners and residency programs.
Natasha Vora, Manuel Saldivar, Sue Anne Chew. Biomedical Freshman Research Initiative (BFRI) at The University of Texas Rio Grande Valley – An Opportunity to Expose A Larger Number of Underrepresented Students to Research

There is a vital need of increasing retention of minority students, including Hispanics in the scientific discipline academic pipeline to increase the low representation of minorities in the healthcare workforce [I]. Undergraduate research experiences are becoming a more critical component in training students, as they are associated with many gains; however, a key problem is that most research opportunities are offered to undergraduates only later in college, after the critical period of attrition and usually given to academically strong students who are not as likely to fall in the at risk group of falling out of the pipeline. The Biomedical Freshman Research Initiative (BFRI) is a course- based undergraduate research experience (CURE) at the University of Texas Rio Grande Valley (UTRGV), a minority-serving institution (MSI). It is part of the Bachelor of Science in Biomedical Sciences (BMED) program which is a pipeline for health professional careers. Because of how the program is designed, BFRI allows a much larger number of students to be exposed to research. We hypothesized that participation in research through BFRI will result in an increase in student retention rates and academic success.

Methods: Institutional data of students was obtained from the UT RGV Department of Strategic Analysis & Institutional Reporting and analyzed to compare student retention and academic success of BFRI students versus non-BFRI, BMED students. The information on the courses each student took was used to determine if the student was still in BMED or UTRGV as of Spring 2017.

Student overall UTRGV GPA was used to determine students' academic success.

Results\Outcomes: We found that there was a higher retention of BFRI vs. non-BFRI students in BMED (63% vs. 21% and 49% vs. 38% for Cohort I and 2, respectively) or UTRGY (including other majors other than BMED, 63% vs. 48% and 80% vs. 67% for Cohort I and 2, respectively).

Discussion: This suggests that CUREs such as BFRI are a promising avenue to provide an opportunity for a larger amount of minority students to be exposed to research at a low cost and manpower and retain them in the health profession pipeline. Furthermore, BFRI is a great avenue to train junior faculty and is a good way for senior research faculty to continue expanding their research.


Mark Wolffarth, Bruce Niebuhr, Virginia Niebuhr. Building an App for a Pediatric Residency Program: The Process and Utility

Residents and faculty often have difficulty quickly finding clinical administrative information such as phone number, schedules, policy guidelines and internal operating procedures. The most convenient access spot for this information could be through a mobile app.

Goal: Our goal was to develop an information app for our residency program.

Methods: A Pediatric Residency Information app was developed using Buildfire, a cloud-based app builder requiring no coding skills. Development and functionality testing occurred in three phases: pre-alpha (developers' testing), alpha (small group of invited testers) and beta (volunteer testers). Development took about 30 XX-hours/month. After testing, improvements were made in content, layout and navigation. Usage and satisfaction were evaluated using online survey methodology, with emailed invitation for participation. The 11-item survey assessed ease of installation and use, frequency/type of app use, and demographic info.

Results\Outcomes: Of the 40 respondents, 100% faculty and residents reported regular usage. Access to contact information was most highly rated function. 100% (40 / 40) reported that app installation was not difficult. 97.5% (39/40) reported that information in the app is clear/easy to view. 87.5% (35/40) thought the app might contribute to program image for prospective residents.

Discussion: Development of a mobile app for clinical management information proved to be quite easy with app development software. Residents and faculty find it quite valuable. Continued use of the app likely will lead to requested enhancements. Other clinical education programs may benefit from development of a similar app.
Melissa Yates, Hwa-Young Lee, Shine Chang, Carrie Cameron. First-Generation Students Leading the Way: Powerful tools to support future research leaders

The needs of students who are the first in their families to graduate from college (first-generation college students) are rarely considered after they transition to graduate school; yet studies show that first-generation students have longer times to graduate degree completion and higher attrition rates. Providing resources to support this under-recognized group of students can improve engagement and persistence in graduate school, as well as increase commitment to future research careers. Growth of scientific identity, as well as increased science self-efficacy and leadership/teamwork self-efficacy have been linked to increased persistence in scientific research for underrepresented minority students and is predicted to have a similar impact on the diverse population of first-generation students at the doctoral level.

Methods: First-generation students in the UT Graduate School of Biomedical Sciences, School of Biomedical Informatics, and School of Public Health were invited to participate in this leadership skills workshop series. Demographics and social cognitive measures (e.g., scientific identity, science self-efficacy) were collected. Measures related to the graduate school experience and knowledge of leadership concepts were also collected. Electronic surveys for data collection were administered before and after the workshop series.

Results\Outcomes: This pilot project was designed to implement training modules on communication skills, leadership/teamwork strategies, and tools for networking and career exploration within a peer community (First-Generation Student Group). The goal of this curriculum was to support first-generation students' growth of scientific identity and self-efficacy, while increasing engagement with the academic research community. A total of 19 graduate students participated in 1-2 hour monthly workshops arranged between monthly First-Generation Student Group meetings (contact every 2 weeks). Preliminary analysis shows that students reported increased knowledge of leadership concepts (e.g., power and influence styles, personality types), as well as increased confidence in their leadership potential. Measures of scientific identity and science self-efficacy show positive gains. Engagement with faculty was increased, but no difference was observed for engagement with other students.

Discussion: This program was designed and implemented to provide support to the under-recognized group of talented first-generation students at the graduate school level. This provides valuable preliminary data for larger survey studies to better understand first-generation student needs at the graduate school level. The workshop series showed positive changes in scientific identity and science self-efficacy, as well as increased student engagement with faculty, suggesting that programs such as this one could have positive effects on persistence in scientific research for first-generation students at the graduate school level.