Assessment

IMPACT OF AN ONSITE NIGHT INTENSIVIST ON RESIDENT TRAINING AND LEVEL OF STRESS/ANXIETY WHILE WORKING IN CRITICAL CARE UNITS DURING THE COVID-19 PANDEMIC

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BACKGROUND: COVID-19 increased challenges for internal medicine (IM) residents on intensive care units (ICUs) night shifts, when onsite supervision is typically unavailable. The impact of onsite night intensivists on care quality has been controversial, and the effect on resident training is unclear, particularly during a time of crisis.

PURPOSE: To better understand the challenges for IM residents in ICU night shifts during a COVID-19 surge, and the impact of an onsite night intensivist on resident training, autonomy, and stress.

METHODS: This study was conducted in the MedStar Health IM residency program in Baltimore after IRB approval. A mixed-methods survey was conducted in spring 2020 (during a COVID-19 surge in the region) to assess our residents’ experiences in the ICUs and the impact of onsite night intensivists on their education, autonomy, and stress.

RESULTS: Of 63 participating residents, 40% were female. During a COVID-19 surge, 72% (44/61) residents endorsed moderate to severe stress/anxiety in making critical decisions in the ICU at night due to increased acuity of the disease, work volume, unfamiliar interventions, distress, and decreased efficiency due to donning personal protective equipment. 78% (39/50) residents endorsed better education with an onsite night intensivist, and most (74%, 37/50) saw a mild or no decrease in autonomy. Comments about onsite night intensivists cited improved patient care, safety, and additional teaching. These benefits were viewed as worth some autonomy compromise.

CONCLUSIONS: The COVID-19 pandemic created new challenges for IM residents in ICUs. Our results reflect an overall positive evaluation of an onsite night intensivist in enhancing residents training experiences and stress on ICUs night shifts without compromising their autonomy, particularly during a crisis of COVID-19 pandemic. Our findings are limited to our setting and reflect resident perceptions rather than more objective measures of outcomes.

MEDICAL STUDENTS’ LEARNING OUTCOMES AND EXPERIENCE IN MULTIDISCIPLINARY PRACTICAL EXAM PRIOR TO AND DURING COVID-19

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PURPOSE: Recognition and interpretation of gross specimen is essential for students in the assessment of Pathology and Anatomy during their pre-clinical medical training. Prior to COVID-19, multidisciplinary practical exams (MDPE) were conducted as in person exams (3D) using pathological pots and cadaver for Year1 and Year 2 MD students in University of Queensland. Due to COVID-19 lockdown, MDPE had to be conducted as an online image-based exam (2D) using an electronic platform (Examsoft). This study aims to evaluate and compare students’ performance and experience in the online, or in-person format of MDPE.

METHODS: Student performance in (3D) practical exam (2019) and (2D) practical exam (2020) was evaluated and compared, both at cohort level and at course grade level. Psychometric analyses were used to assess the validity and reliability of the assessment. In addition, students were also
invited to complete an online questionnaire about their experience of online vs in-person MDPE.

RESULTS: The reliability score Kuder-Richardson Formula 20 (KR-20) was > 0.74 for both assessments with the average cohort performance score being 72% (3D) and 67% (2D). Difficulty index and Point-Biserial correlation showed discipline specific difference but overall, there was no significant difference between the two mode of exams. However, students’ feedback indicated that image-based exam during COVID-19 was more challenging compared to in person exams due to lack of 3D visualization and orientation. Analysis also showed that this change had very little impact on the performance (≤4%) of students in higher course grade (≥5) but it greatly affected the performance (> 11%) of lower grade students (≤3).

CONCLUSION: The study suggest that the overall cohort performance wasn’t impacted by the change from in-person to online practical exam however it is important to assess the impact of this change on the performance of lower grade students.

IS OUR IN-HOUSE SPECIAL MASTERS PROGRAM BENEFITING OUR STUDENTS? A FIVE-YEAR ANALYSIS OF DATA

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PURPOSE: Medical science educators have reported ways to forecast student performance during medical school and on national benchmarks using pre-admission criteria for decades. However, there are few reports of whether or not in-house specialty masters programs may convey long-term student success. With these programs becoming globally present, it is important to understand if benefits are conveyed to the future medical student.

METHODS: We analyzed five years of data from our institution’s in-house specialty Master of Science in Pharmacology program to compare students who attended this program (n = 67) with their peers who did not (n = 780). Pre-admissions academic indicators including MCAT percentile and average overall and Biology Chemistry Physics Math (BCPM) GPA as well as medical school curriculum performance and USMLE Step 1 scores were compared between the two groups.

RESULTS: Pre-admission academic indicators of masters students were significantly lower that non-masters students. However, masters students collectively outperformed non-masters students in our medical curriculum, and masters students that earned a 3.5 or higher GPA in the specialty program outperformed other students by a wide margin in both curriculum and on the USMLE Step 1 exam (p < 0.0001).

CONCLUSIONS: In-house specialty masters programs are becoming widespread and attendance is becoming a global theme in medical school applications. We demonstrate that graduates of our in-house specialty masters program outperformed other students at our institution by a highly significant margin in the preclinical medical curriculum and on USMLE Step 1. This was despite that fact that the non-masters cohort had higher MCAT performance and overall undergraduate GPA. These results indicate the benefits of in-house specialty masters program for future students.

TRACKING THE PROGRESSION OF FIRST YEAR MEDICAL STUDENTS’ CLINICAL REASONING SKILLS USING AN ASSESSMENT RUBRIC DURING PROBLEM-BASED LEARNING INSTRUCTION: A PILOT STUDY

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PURPOSE: Clinical reasoning (CR) is a central component of doctors’ competence and a fundamental goal in medical education. PBL was introduced to foster CR skills based on clinical problems similar to real practice (1). The purpose of this study is to investigate the development of first-year medical students’ CR during PBL instruction over eight weeks of the course of foundational science.

METHOD: The subjects of this study are the PBL groups of the 2024 class. The study ran for eight weeks. Based on the literature (2), we developed a 10 components analytic rubric to examine students’ development of CR skills. The rubric was used by five PBL facilitators to examine 41 students’ CR at the beginning and near the end of the course. Students completed a questionnaire to self-assess their development of CR skills. Nonparametric testing Wilcoxon signed-rank test was used to examine students’ performance.

RESULTS: Based on faculty facilitators’ grading, students showed significant improvement in all the 10 components of the rubric. While collecting cues and information and identifying the patient’s problems demonstrated the largest improvement, diagnosis justification, and developing goals in prevention strategies showed the least improvement. Students rated their performance significantly higher than faculty assessment related to half of the components. Students’ reflective writings showed their awareness of important components of clinical reasoning.

CONCLUSION: Overall, the project provided empirical evidence indicating the progression of students’ clinical reasoning. However, the students tended to overestimate their clinical reasoning skills in assessing their competency. The results indicated the potential benefits of using the rubric.
CONDUCTING A VIRTUAL CS STYLE EXAM DURING COVID TIMES

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PURPOSE: In March 2020, all students were to complete their academic work on line for the remainder of academic year 2019–2020. This accounted for a sudden and dramatic change in how the year was progressing and required thoughtful planning to appropriately meet all of the academic requirements mandated by the LCME. The development of their curriculum included continuing some type of patient interaction to continue critical thinking and clinical reasoning skills. A team of faculty reviewed and updated the twelve-station case based clinical exam, that mirrors the USMLE Step 2 CS exam in content, delivery and evaluation, to become a virtual patient experience.

METHODS: All 180 MS III students completed the twelve-station case based clinical exam via Microsoft Teams in small groups of twelve students / exam date. The exam mirrored the timing of each station at 15 min patient interview and 10 min written note. The students were trained to conduct a Telehealth visit and articulate their physical exam skills at the appropriate time. A proctor (MS IV student) was trained to deliver the door note, provide the timing, record the encounter and deliver the appropriate physical exam skills findings.

RESULTS: Grading was completed by faculty trained to evaluate the clinical notes for appropriate History Findings, which included the Physical Exam findings that were articulated. The evaluations of the differential diagnoses, with appropriate defenses as well as the diagnostic studies were evaluated as well. Weighting for each section was done in concert with our past experiences of this exam. Students were graded and given feedback on their written notes. This activity was in their overall grade for the twelve-week Independent Study. The scores for this exam were notably lower than previous year’s cohorts.

CONCLUSION: Future virtual exams will need to include extensive virtual practice, but continued practice in current class has seen improvements.

FREQUENCY OF UNCONVENTIONAL CERTAINTY-BASED REMEDIATION PERFORMANCES ON HIGH-STAKES OT ANATOMY EXAMINATIONS

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PURPOSE: Improving remediation strategies and assessment accuracy are ongoing challenges in health science education. While incorrect-to-correct remediation performances conventionally translate to positive remediation, certainty-based assessments highlight instances when this scenario unconventionally signifies negative remediation; for example, when an educated guess (indicating partial knowledge) resulting in an incorrect response is negatively remediated to a correct response achieved through wild guesswork (indicating absent knowledge). Certainty-based remediation strategies also underline situations where correct-to-incorrect remediations are positive or non-directional, correct-to-correct remediations are positive or negative, and incorrect-to-incorrect remediations are positive or negative. The objective of this study is to determine the frequency at which these unconventional remediation performances occur among certainty-based individualized remediation questions (IRQs) on high-stakes Occupational Therapy (OT) anatomy examinations.

METHODS: On each of six MCQ (selected-response) and practical (constructed-response) examinations, a 2016 cohort of 64 OT students at the University of North Dakota reported certainty in each examination response using a 3-point Likert-type scale. Each student received post-examination feedback regarding the six learning objectives on which they performed poorest. Upon subsequent examination, each student was administered six IRQs to retest each of their identified learning objectives. Examinations were scored and remediation performances were analyzed.

RESULTS: Of the collective 4608 remediation performances, 2066 (44.84%) were unconventional. Thirty-two (0.69%) of these demonstrated incorrect-to-correct negative remediation, and 121 (2.63%) demonstrated correct-to-incorrect positive remediation. The remaining 1913 (41.51%) belonged to one of six scenarios involving non-directional remediation. Despite an average positive remediation, the IRQs decreased students’ overall examination scores by 1.29 ± 0.01% when scored according to correctness of the responses alone.

CONCLUSIONS: While extreme cases of unconventional remediation were relatively infrequent, unconventional remediation as a whole was considerably high among OT students’ certainty-based IRQs. This study demonstrates...
clear evidence for the extent at which remediation performances assessed by correctness-only assessment methods can be misinterpreted.

**FACULTY AND STUDENT PERCEPTIONS OF ENTRUSTABLE PROFESSIONAL ACTIVITIES IN COVID-19 VIRTUAL CLERKSHIPS**

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**PURPOSE:** In response to the COVID-19 pandemic, Philadelphia College of Osteopathic Medicine pivoted to a virtual learning platform to provide clinical education to students. Instructional modalities included virtual synchronous and asynchronous instruction and assignments provided by faculty.

**METHODS:** An online survey was conducted to ascertain the perceptions of Clerkship Directors and rising fourth-year medical students on content delivery, assessment, and current performance ability related to the 13 Entrustable Professional Activities (EPAs) in the virtual learning environment. The Clerkship Director survey was confidential and addressed specific learning activities within each EPA. The student survey was anonymous and inquired about the 13 EPAs in general. We compared the percentage of each response option between faculty and students across all core clinical clerkships and within each clerkship. Survey data were collected and managed using REDCap and data were analyzed using Tableau®.

**RESULTS:** The survey identified EPA-related content which could be strengthened in the virtual clinical clerkship experience. Differences in perception between faculty and students were notable. In general, the students perceived more EPA-related content delivery and assessment than the faculty. Very few EPAs were reported lacking in content delivery and assessment among both groups. The faculty perceived more need for some level of supervision across all the EPAs and noted that a minority of students could not perform certain EPAs at all. Conversely, a greater percentage of students perceived that they could perform the EPAs independently.

**CONCLUSION:** These findings will inform efforts to improve EPA-related content and assessment in both virtual and in-person clerkship training. This work reinforced the importance of the 13 EPAs in addition to disease-specific knowledge and provided Clerkship Directors a framework to address and improve the clinical practice skills and proficiency level required of medical school graduates as they transition to residency.

**MOOC QUALITY ASSESSMENT “LEARNING EVALUATION IN CLINICAL SETTINGS”**

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**PURPOSE:** Clinical teachers require effective training in educational evaluation directed towards a comprehensive, patient-centered education, with emphasis on the evaluation of clinical competence. MOOCs are open educational resources designed to be taken through a platform on the Internet. The purpose was to evaluate the quality aspects of the MOOC “Learning evaluation in Clinical settings” from the perspective of the users.

**METHODS:** A quantitative, descriptive and transectional method was used. An instrument of Alemã, Sancho and Gómez (2016) was applied to 16 professors who took the course. This questionnaire consists of 50 questions with a Likert scale where 1 is strongly disagrees and 5 is strongly agrees. The results are analyzed with descriptive statistic.

**RESULTS:** The Pedagogical, Functional and Technological indicators have an average close to 5. The Pedagogical indicator evaluates contents, learning resources, and evaluation. The Functional indicator assesses autonomy and user control, ease of use and documentation functionality. The Technological indicator evaluates those of visual environment, design, versatility, navigation, interaction and dialogues. However, the Time indicator has an average of 3.36. This indicator evaluates the calendar to study topics, perform activities, perform exercises, present exams and participate in discussion forums. This is low because the time that users had to finish the course was limited, since it was a pilot group.

**CONCLUSIONS:** The quality indicators of the instrument have allowed the evaluation of the MOOC. It is important to know this information in order to make the necessary changes to improve its quality. The idea of MOOCs is to offer education with high quality standards to a massive number of participants around the world who have access to the internet at low cost. It is intended to continue applying the instrument for continuous improvement.

**LESSONS FROM THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES (AAMC) CORE ENTRUSTABLE PROFESSIONAL ACTIVITIES (EPAS) FOR ENTERING RESIDENCY CORE EPA PILOT PROJECT: LEARNING GOAL ORIENTATION AND STUDENT PERCEPTIONS ABOUT THE CORE EPAS**
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PURPOSE: Starting in 2015, implementation of the AAMC Core EPAs using an entrustment framework was piloted at 10 U.S. medical schools. As prior work from our Pilot team postulated that a growth mindset is an important learner perspective for successful EPAs implementation, we investigated the relationship between students’ Learning Goal Orientation (LGO, using an instrument established by others to measure growth mindset) and their perceptions about the Core EPAs implementation at their schools.

METHODS: Using a subset of data from the 2020 AAMC questionnaire administered to third-year (M3) clerkship students at selected pilot schools, we tested a set of demographic characteristics, attitudinal variables about Core EPAs implementation, and frequency of direct observation/feedback on EPAs for their associations with LGO score (the sum of responses to the five LGO instrument items, each rated 1 = strongly agree to 6 = strongly disagree) in bivariate analyses; 2-sided p < 0.05 considered significant.

RESULTS: Among 238 students, the mean (standard deviation) LGO score was 8.9, (3.3). LGO was not associated with age, gender, race or school (each p > 0.05). Lower LGO score (i.e., a stronger LGO) was associated with each of: comfort with asking supervisors for EPA assessments (p  < 0.001), endorsement that working with a coach increased self-reflection skills (p < 0.001), agreement that EPAs positively contributed to clinical abilities (p = 0.03) and satisfaction with the quality of their education (p = 0.01). Lower LGO scores were observed among students who had (vs. had not) asked supervisors to evaluate them on EPAs that they were not confident they could perform well (p = 0.03) and also among students who had received feedback > 5 (vs. ≤5) times in performance of multiple EPAs (each p < 0.05).

CONCLUSION: M3 students with a stronger LGO -a “growth mindset” -had more positive perceptions about the use of Core EPAs and had more frequent feedback from their supervisors.

THE IMPACT OF QUESTION TYPE AND WORD CHOICE ON QUALITATIVE FEEDBACK ON FACULTY EVALUATIONS

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PURPOSE: Course evaluations are conducted within educational institutions to collect data on the quality of faculty activities, including: Presentation effectiveness, teaching materials, course organization, exam writing, and professionalism. At our institution, adjustments were made to the course evaluation to investigate whether our traditional survey, which asks the students to list “positive and negative” feedback about teaching faculty, was leading students and skewing data.

METHODS: Our typical course evaluation asks students to rate teaching faculty and then asks open-ended questions, “What did this presenter do well?” and “How can this presenter improve?”. The investigators noticed that there were large numbers of negative comments, even for professors that were highly rated. To explore whether asking students directly to include negative feedback was skewing data, the course evaluations for several modules of the 2020–2021 year were altered to ask one open response question, “general comments about this presenter”. A qualitative analysis was performed to measure negative and positive feedback and compared to previous years.

RESULTS: The standard faculty evaluation form that used two open response boxes (“what did the presenter do well” and “how can this presenter improve”) resulted in an average of 37.71 positive comments and 14.86 negative comments across faculty. After changing the open response boxes to one general comment box, the average positive comments did not significantly decrease (38.71), but the negative comments did (5.0).

CONCLUSION: The inclusion of a negative comment box in a faculty evaluation form may drive students to report negative comments that would not have been provided if not prompted. Institutions should consider removing the negative comment box to allow students to independently report their impressions of a faculty presenter. Unnecessary negative comments may have detrimental psychological and motivational effects for teaching faculty.

EVALUATING THE EFFECT OF TRADITIONAL VS. VIRTUAL VS. BLENDED CLINICAL EXPERIENCE ON NBME SHELF PERFORMANCE

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PURPOSE: The COVID-19 pandemic has interfered with delivery of clinical training in undergraduate medical education. Blended learning, the combination of virtual and in-person clinical learning, and virtual learning were adapted as teaching modalities to address the disruption at Rutgers RWJMS. Curricular changes implemented due to the pandemic provided a natural experiment to assess impact of
curricular innovations on National Board of Medical Examiners (NBME) subject ("shelf") exam performance.

METHODS: At RWJMS, students traditionally spend 6 weeks on core specialty experiences and take the shelf exam on the last day of the clerkship. In March, traditional clerkships were interrupted, and students postponed their shelf exam to various times throughout 2020. Shelf exam scores and number of days post traditional-clerkship end were evaluated using ANOVA to assess impact of timing on test scores. While clinical experiences were on hiatus, students completed 2-week specialty-based virtual didactics. These students completed 4-week clinical experiences when clinical training resumed. Students chose to take the shelf exam either after the virtual didactics but before clinical experience or after 2-week virtual didactics plus 4-week clinical experience. Results of shelf exam scores for students on traditional versus virtual and traditional versus blended clinical experience were analyzed using paired t-test.

RESULTS: Preliminary data suggest that students on virtual clerkship (n = 93) out-performed themselves on traditional clerkships (P-value < 0.001). Students on the blended clerkship (n = 51) showed no change in performance (P-value 0.06). Additionally, students who took the examination closer to end of traditional experience performed better than students who delayed the exam.

CONCLUSION: The virtual teaching modality did not hinder shelf exam scores. Reducing the competition between study time and clinical demands may have contributed to an increase in scores despite lack of clinical exposure. Re-considering timing of testing in the curriculum may improve test scores and emphasize focus on developing clinical skills.

Curriculum

IMPACT OF A LONGITUDINAL COMMUNITY HEALTH ELECTIVE ON MEDICAL STUDENTS

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PURPOSE: The University of Oklahoma College of Medicine (OUCOM) developed two longitudinal Community Health (CH) electives that allow medical students to volunteer in medically underserved areas (MUAs) during the first 3 years of training in an effort to develop a greater understanding of medically underserved populations (MUPs), promote greater empathy for MUPs, cultivate an interest in Primary Care, and strengthen a desire to serve MUPs long-term. Students volunteered 80 h in 15 charitable clinics in OKC, 8 h with different nonprofits in MUAs, and 12 h in several community-based, preventative health initiatives. This study evaluated the effectiveness of the CH electives in accomplishing these four course objectives.

METHODS: Fifty 4th year medical students from the Class of 2021 OUCOM completed a survey assessing the impact of their experiences completing the CH electives on 8 metrics. Only 42 students answered all survey questions. This survey used a five-point Likert Scale (Strongly Disagree to Strongly Agree). Qualitatively, students were asked to describe their experience completing the electives.

RESULTS: Of the 42 research participants, 100% reported increased empathy for MUPs, 95% reported increased understanding of challenges facing MUPs, 91% reported increased understanding of challenges facing physicians working with MUPs, 86% reported increased interest in working with MUPs, and 52% reported increased interest in Primary Care. The most common words used to describe the course were “eye-opening”, “rewarding”, and “impactful”.

CONCLUSION: The CH electives serve as an innovative strategy to increase student empathy for MUPs, increase understanding of challenges facing MUPs and the physicians that work with them, and increase interest in working with MUPs. A reduced percentage of students reported increased interest in Primary Care when compared to the other survey metrics. More investigation is required to further assess this finding.

QUICK AND CLEAN: LCME 7.3 WITHOUT A WET LAB

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PURPOSE: Funding cuts and the coronavirus pandemic have reduced wet lab teaching in medical school curricula. Laboratory sessions had been an excellent opportunity for Liaison Committee on Medical Education (LCME) Standard 7.3—medical student training in the scientific method. We developed a new non-laboratory exercise in which the students are challenged, individually and in small groups, to state and test hypotheses based on published patient data.

METHODS: The new SUNY Upstate Scientific Method exercise begins with an individual Prework assignment (hypothesis-stating and review of the odds ratio calculation) and Narrative Feedback on the Prework. Students then participate in a class session with one Individual task (testing the hypothesis by performing an odds ratio calculation on provided patient data), two Small Group tasks (comparing
results and discussing further questions with peers), and one Large Group overview (drawing conclusions and imagining future studies). Importantly, the students test their hypotheses using real published patient data.

RESULTS: SUNY Upstate Medical University underwent LCME reaccreditation in 2019. We presented this exercise, which is the only session at Upstate that clearly meets all the criteria of Standard 7.3, to the accreditation survey team. Scientific method training was noted to be satisfactory in the preliminary and final accreditation reports. When students were prompted for feedback, two-thirds of respondents reported that this exercise enhanced their understanding of the learning objectives [response rate 0.34 (58/170), 62% chose “agree” or “strongly agree”].

CONCLUSION: We have created an LCME-approved, medically-relevant review of the Scientific Method in a low-cost interactive format that can be delivered online.

“WE DON’T REALLY TALK ABOUT IT.” ROLE MODELING AND COPING WITH PATIENT DEATHS IN THE ICU

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PURPOSE: Medical trainees may experience distress when faced with a patient death, and many see a need for improved training in dealing with deaths. We interviewed internal medicine (IM) residents and their ICU attendings about their experiences with patient deaths to understand how role modeling (intended or not) affects how residents cope with patient deaths.

METHODS: This study was approved by the MedStar IRB. Semi-structured interviews were conducted by mental health professionals with 15 IM residents (9 female; 8 PGY1, 4 PGY2, 3 PGY3) and 7 ICU attendings (2 female; years in practice 1.5—34) in the MedStar Health IM residency program in Baltimore. Interviews continued until thematic saturation was reached. Themes about role modeling and coping with deaths in the ICU were identified.

RESULTS: Resident reactions to patient deaths include negative emotions or feeling numb/detached. They may worry about their own inadequacy or blame themselves for a patient death. Attending reactions may include negative emotional experiences but they often show limited or no emotional reaction. While attendings may have questions about the patient care that was provided, they do not report worrying about their own performance as do residents. Gaps in role modeling by attendings were identified in that deaths are often not discussed, residents may be confused by their emotional responses to patient deaths, and resident fears of inadequacy go unaddressed. Residents and attendings cited the possible benefit of team debriefings after a patient death to address these gaps.

CONCLUSIONS: Gaps in role modeling by ICU attendings and the resulting perceptions of residents in how physicians cope with patient deaths may be creating an informal curriculum that leaves residents less than well-equipped to cope effectively. Team debriefings after patient deaths may help to bridge these gaps.

OBTAINING AN INCLUSIVE SEXUAL HISTORY: INSIGHTS FROM A PEER-LED FIRST YEAR MEDICAL SCHOOL WORKSHOP

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PURPOSE: We aim to inform potential gaps in medical education around sexual history taking. Through a peer-led workshop, students were encouraged to reflect on implicit biases, learn about a wide spectrum of sexual behaviors, and practice sexual history taking.

METHODS: First-year medical students (n = 176) at the University of New England participated in a 2-h workshop that included lecture and small group sessions that were designed and led by 1st and 2nd year medical students. A 25 question Likert Scale survey was administered pre/post workshop to assess knowledge and attitude related to sexual history taking. Questions were binned to reflect assessment of knowledge (13) or attitude (12). A paired t-test was utilized to determine statistical significance between pre- and post-workshop survey data.

RESULTS: The average response rate per question was 95.7% for pre-workshop surveys, and 94.4% for post-workshop. The mean percentage of responses indicating knowledge increased from 60.5% in the pre-survey to 79.0% in the post-survey (p = 0.008). The mean percentage of responses indicative of inclusive attitudes increased from 73.1% to 84.5% (p = 0.0005).

CONCLUSION: Based on the preliminary data presented here, our study suggests that there are potential gaps in medical education regarding knowledge and attitudes related to sexual history taking. A peer-led, 2-h course may effectively increase knowledge and shift attitudes regarding sexual behaviors and related clinical history taking at the medical student level.

A2IM—ARTIFICIAL AND AUGMENTED INTELLIGENCE IN MEDICINE
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PURPOSE: Digital healthcare technologies, including analytics and artificial intelligence (AI) are addressing healthcare challenges of the twenty-first century. There is a need to prepare professionals in the healthcare workforce for practice that will include the use of AI and other emerging digital technologies in healthcare. We share the results of implementing an innovative modular curriculum that integrates analytics and AI into a longitudinal curriculum.

METHODS: This four-week AI course has been implemented in the 4th year of medical school curriculum integrating AI and predictive analytics with evidence-based medicine, pathology, pharmacology, tele-monitoring, quality improvement, value-based care and patient safety. This course reinforces the importance of working in multidisciplinary teams to achieve common goals. Students complete required foundational readings and videos, live online lectures, and work together in groups of 3 to 4 on an active learning, team project/assignment every week. Students provide feedback to others in their group and reflect on their own learning and how they will apply it in their future careers. Faculty review the assignments and provide feedback.

RESULTS: 20 students have completed the program. Students demonstrated an improvement in knowledge with an average quiz score of 97% and an application assignment score of 89% also reflects their developing skills. The reflection write ups reveal positive attitudes towards physician's role in influencing analytics/AI decisions after completion of this course, as well as ability and readiness to assume analytics responsibility. Enrollment and satisfaction with the program have grown with each offering.

CONCLUSION: Given the current landscape with a dearth of courses on integration of AI in medicine, we present a modular virtual AI course that integrates well into existing medical school curriculum. The course is well received and has demonstrated improvement of knowledge, skills and attitudes of participants in clinical analytics and AI.

PEDIATRIC SIMULATION IN PRECLINICAL MEDICAL EDUCATION USING A HIGH-FIDELITY PATIENT SIMULATOR AND STANDARDIZED PATIENT

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PURPOSE: The role of high-fidelity patient simulators (HFPS) and clinical simulations has been increasingly incorporated into preclinical medical education. The objective of this study was to implement a pediatric simulation activity running parallel with a Problem Based Learning (PBL) curriculum to provide an opportunity to demonstrate clinical knowledge and apply classroom material in a realistic scenario. The focus was to aid in student understanding of how to communicate with a parent of a pediatric patient and manage an infant with Neonatal Respiratory Distress Syndrome (NRDS) based on respiratory physiology and pathology concepts.

METHODS: The session on NRDS in an infant was aligned with a PBL case on Acute Respiratory Distress Syndrome in an adult to compare and contrast the two conditions. Each simulation session was comprised of six to seven year one students working with a neonate HFPS, a standardized patient (SP) acting as a mother, and one facilitator. Pre-test and post-test surveys designed as a 5-point Likert scale were used to determine perception of student knowledge of pediatric respiratory conditions and communication skills.

RESULTS: The post-test survey demonstrated a statistically significant increase in perception of knowledge and communication skills following participation in the simulation. Qualitative data from the survey showed strengths of the session to be the creation of a practical, interactive, hands-on experience and application of classroom learning. There was unanimous interest amongst the participants to engage in similar future pediatric sessions.

CONCLUSION: The addition and implementation of pediatric simulations in the preclinical years of medical education can increase the exposure to the differences in pediatric and adult care and enhance student application of basic science concepts. This study suggests that interactive simulations with combined HFPS and SPs provide students with a foundation of clinical reasoning and communication skills for their clerkships and futures as physicians.

THE EDUCATIONAL EXPERIENCE OF PRECLINICAL MEDICAL STUDENTS DURING THE COVID-19 PANDEMIC

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PURPOSE: The education of medical students must continue despite the SARS-CoV-2/COVID-19 pandemic and the implementation of biosafety measures. As a consequence, virtual instruction has become the educational method of choice for pre-clerkship medical students. The goal of this study is to determine the effects of switching to a nearly complete virtual environment for the delivery of pre-clinical instruction at the Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center at El Paso (PLFSOM).

METHODS: The aim of our study is to assess the impact of the COVID-19 pandemic on our curriculum delivery and effectiveness. We surveyed two cohorts of students (PLFSOM classes of 2023 and 2024) addressing the following items: 1) student perceptions, satisfaction, and changes in attitude regarding the utilization of virtual instruction for curriculum delivery; 2) student perceptions and attitudes about enrichment activities, wellness and connectedness; and 3) student perceptions about topical coverage of the COVID-19 pandemic in the curriculum.

RESULTS: One hundred and twenty three of two hundred and twenty three students responded to the survey (55%). Results indicate students needed to change their study methods (77%), experienced technical issues (84%), had difficulty adjusting to virtual instruction (56%), and had difficulty communicating with faculty (62%). Students also reported the environment negatively affected their social skills (76%), connectedness to peers (89%), professional development (62%) and sense of wellness (60%). Sixty percent of students felt that the curriculum addressed important ethical, societal and public health issues about the pandemic. Differences between the two cohorts will be reported.

CONCLUSION: Our results should prove valuable in examining any perceived benefits or drawbacks from changing delivery methods for a medical curriculum, help design improvements for virtual instruction, and will add to the knowledge on the impact of pandemics or other rapid and dramatic disruptions in medical education programs.

ENGAGING NEW PHYSICIAN ASSISTANT STUDENTS USING SELF-ASSESSMENT TOOLS FOR THE VIRTUAL DELIVERY OF AN ANATOMY & PHYSIOLOGY COURSE DURING COVID-19

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Wake Forest School of Medicine

PURPOSE: The COVID-19 global pandemic has disrupted the way educators deliver curricula. Medical education programs transitioned to online delivery to ensure the safety of both students and faculty. This posed a significant challenge to teach an introductory Anatomy & Physiology course to 90 newly matriculated students in a Physician Assistant (PA) program. To promote active learning and to engage learners, we developed questions designed to promote Self-assessment, Identification, and means to Patch knowledge gaps (SIP) in preparation for online Small Group Discussions (SGD).

METHODS: Following the completion of the course, a survey was distributed to assess the perceived learning benefits of the questions developed and SGD events. Data were categorized based on whether the students found the sessions helpful, neutral, and not helpful. Chi-square analyses were conducted.

RESULTS: Survey response was 87.5% (77/88). Sixty-four percent rated the SGD as helpful, 27% neutral, and 10% not helpful. More students in the “helpful group” agreed that the SGD questions provided a framework for learning (p < 0.001), helped them recognize the most essential elements in lectures (p < 0.001), gauged their understanding after lectures (p < 0.001) and facilitated the identification of knowledge gaps (p < 0.001). Students in the “not helpful group” generally found the questions too advanced (p < 0.002). Positive themes revealed by the survey indicated SGD questions helped with the engagement of the material highlighted key learning points, and provided better focus on knowledge evaluated through a summative assessment. Negative themes revealed were associated with individual group dynamics during online SGD events and the perceived differences in academic levels.

CONCLUSION: In summary, the SGD questions positively impacted the study strategies and learning experiences of new PA students during virtual curriculum delivery. Future plans include developing questions of varying difficulties to encourage the academically vulnerable and promote a more positive learning environment.

SERVICE-LEARNING EXPERIENCE WITH LOW-INCOME AND SPECIAL NEEDS STUDENTS IMPACTS PARTICIPANT OUTCOMES

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PURPOSE: The purpose of this study was to investigate perceived impacts of service-learning (SL) experience on participants’ personal, cognitive, and professional development, based on whether they served low-income students and students with special needs.

METHODS: Anatomy Academy (AA) is a SL program in which pre-professional health professional students
(Mentors) teach anatomy, physiology and nutrition to children (Students). Mentors serve at multiple sites, which vary in Student population. Current and former Mentors were invited to complete a survey of Likert-style questions evaluating the perceived impact of their AA experience on: teaching skills, personal and interpersonal development, civic engagement, and professional and academic development. Statistical analyses were completed using SPSS.

RESULTS: The survey was completed by 219 Mentors. A between-subjects factorial MANOVA was calculated comparing the perceived impact of AA participation on outcomes of Mentors who served students at only non-Title I schools, only Title I schools, or a mixture of both, and who served Students with special needs or without special needs. Mentors who worked with Special needs Students reported that AA had a significantly greater impact on their self-esteem (p = 0.02), personal efficacy (p = 0.01), altruism (p = 0.01), communication skills (p = 0.02), ability to work with others (p = 0.00), empathy (p = 0.00), and leadership skills (p = 0.03) than Mentors who did not work with Special needs Students. These effects were not influenced by the Title I status of schools. Mentors who did not serve Special needs students reported a significantly greater impact of AA experience on their intentions to participate in community service if they served students at both Title I and non-Title I schools (p = 0.05).

CONCLUSIONS: AA offers pre- and current health professional student Mentors the opportunity to interact with special populations of students, which uniquely impact aspects of Mentors’ personal and interpersonal development and civic engagement.

THE IMPACT OF MEDICAL EDUCATION REFORM ON THE TEACHING AND LEARNING OF THE ANATOMICAL SCIENCES: FACULTY VIEWS AND OPINIONS

Melissa Taylor

UTHSC

PURPOSE: Medical education in the United States has changed dramatically in the last few decades, moving away from a traditional, didactic, and discipline-based curriculum, to a more integrative, active, and student-centered curriculum. This study examines specific changes that have occurred in anatomical science courses at allopathic medical schools in the United States due to curricular reform and how faculty have reacted to those changes.

METHODS: A survey was distributed to anatomical science faculty who teach gross anatomy, microscopic anatomy, and/or neuroanatomy at allopathic medical schools in the United States. The survey included both quantitative and qualitative questions related to the change in content coverage, the change in lecture and lab experience, and faculty perceptions of those changes.

RESULTS: The survey found that most of the anatomical science courses had their contact hours reduced, leaving much less time for the faculty to teach their students the relevant information. Open-ended survey responses showed that faculty believed the integration of basic and clinical science information was helpful for their students. However, using Mann–Whitney U and Kruskal–Wallis tests relating faculty perceptions on a Likert Scale to changes in the anatomical science medical curriculum, it was found that faculty whose medical school had undergone recent curricular reform had more negative perceptions about their students receiving adequate instruction in anatomical science material.

CONCLUSION: These data provided valuable, though contrasting, information about medical curricular changes and faculty perspectives about those changes. While some faculty had positive things to say about the curricular changes, others believed it was not beneficial to their students. These more negative views should not go unnoticed by administration designing the medical curriculum, and more heed should be taken to listening to all the stakeholders in a medical curriculum.

MEDICAL SCHOOL CURRICULAR FACTORS THAT MAY CONTRIBUTE TO STUDENTS’ CHOICE OF SPECIALTY

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PURPOSE: The goal of this study was to illuminate curricular factors that may influence students’ decisions to pursue given medical specialties—specifically primary care (Family Medicine, Pediatrics, and Internal Medicine). Student interest in primary care is crucial to increasing the primary care workforce which has been shown to decrease healthcare cost and increase quality of life.

METHODS: Augusta University/University of Georgia Medical Partnership alumni were recruited via email to participate in this study. A 28-question survey was constructed including questions on demographics, specialty interest upon admission/graduation, and curricular factors that may have influenced the alumni’s specialty decision. This survey was sent to 220 alumni. Data was collected and analyzed using Qualtrics.

RESULTS: We obtained a 38% response rate to the survey. Top specialties chosen upon medical school admission were undecided (12.5%), Internal Medicine (11.25%), Pediatrics
(10%), Emergency Medicine (8.75%), Orthopedic Surgery (8.75%), and General Surgery (7.5%). Top specialties chosen at graduation were Internal Medicine (22.50%), Pediatrics (11.25%), Family Medicine (10%), Emergency Medicine (6.25%), and General Surgery (6.25%). 71% of alumni reported that the curriculum influenced their specialty decision; 65% identified case-based Small Group Learning (SGL) as positively influencing their interest in the specialty they ultimately chose. Faculty relationships with students were also reported to influence specialty decisions.

CONCLUSION: There was a 23% increase in interest in primary care specialties from enrollment to graduation for our survey respondents, with the largest increases in internal medicine and family medicine. Case-based SGL had the greatest influence of any curricular component on students’ choice of specialty. Institutions that have a mission to increase primary care physicians should consider curricular factors that influence students’ decision on medical specialty.

**DEMONSTRATING THE IMPACT OF IMPLEMENTING AN UNDERGRADUATE CURRICULUM ADJUNCT TO IMPROVE ENGAGEMENT WITH OPHTHALMOLOGY AND SURGICAL EDUCATION IN THE UK**

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PURPOSE: Given the highly competitive nature of Ophthalmology and the decreasing emphasis on surgical teaching during UK medical undergraduate years, we implemented an inaugural National Undergraduate Ophthalmology Conference for UK medical students as a curriculum adjunct, whilst aiming to ascertain the impact on engagement with Ophthalmology and related surgical techniques.

METHODS: Collaborating with Moorfields Eye Hospital, we delivered a national conference incorporating keynote lectures, panel discussions, and practical workshops. Workshops engaged students with microsurgical skills, Oculoplastics simulation, portfolio/interview techniques, and development of clinical leadership skills. Employing a cross-sectional mixed methods study design, pre- and post-conference questionnaires comprising of 5-point Likert scales and open-ended qualitative questions were distributed to the 56 attendees, assessing key metrics encompassing awareness of Ophthalmic surgery as a career, and confidence in performing relevant surgical skills. Curriculum exposure to ophthalmology stratified attendees into three different groups, allowing examination of the relationship between varying integration of Ophthalmology in medical school curricula and post-conference response differences. Statistical analyses were performed using IBM’s SPSS Statistics 26.

RESULTS: Pre- and post-conference 5-point Likert responses demonstrated statistically significant increases across metrics including understanding of the Ophthalmology Specialty Training application (2.80 ± 1.14 to 4.37 ± 0.58 (p < 0.001)), understanding of Ophthalmology as a career (3.27 ± 1.03 to 4.41 ± 0.59 (p < 0.001)), and confidence performing microsurgical techniques (1.71 ± 1.10 to 3.51 ± 1.05 (p < 0.001)). Thematic analysis of qualitative responses highlighted work-life balance as the biggest attracting factor to the specialty, whereas competition rate the major deterring factor. Lectures were rated 4.26 ± 0.53, workshops 4.35 ± 0.17, and the overall conference rating was 4.55 ± 0.55, with 98% of attendees indicating that they would recommend this conference to colleagues.

CONCLUSIONS: We demonstrate the profound value of this educational conference in improving awareness of Ophthalmology and practical surgical skills from an early career stage. We propose that extrapolating this undergraduate curriculum adjunct will stimulate similar impactful engagement across other surgical specialities.

**DEVELOPMENT OF A LONGITUDINAL MEDICAL SCHOOL SOCIAL JUSTICE CURRICULUM INFORMED BY A STUDENT-LED COMMUNITY ASSESSMENT**

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PURPOSE: Medical schools routinely include implicit bias, social determinants of health, racial inequities, and health disparities in their curriculum design. However, students’ experience with the curriculum often reveals flaws in both content and presentation. This was a student-led project by the Institutional Justice and Inclusion (IJI) committee to assess peer perceptions of the effectiveness of current social justice curriculum.

METHODS: The Justice and Inclusion (IJI) committee members recruited Wayne State University School of Medicine (WSUSOM) students through various student organizations to participate in confidential semi-structured focus groups interviews from January-May 2020. Interviews were conducted by IJI team members using a standardized template. Qualitative data from the interviews was de-identified,
coded into discrete categories, and used to craft recommendations for curriculum development.

RESULTS: Thirty-two focus group interviews were conducted. Findings were categorized into ‘issues’ and ‘assets.’ Issues raised by students include a feeling that the current curriculum inadequately addresses important topics of racism in medicine, social justice, physician advocacy, and health disparities. Several students also discussed their concerns about feeling ill-prepared to provide care for diverse patient populations with their current training. Assets identified during the interviews include a diverse urban medical school community and strong leadership support for student social justice advocacy.

CONCLUSIONS: The results of this project clearly demonstrate the need for a well-developed curriculum that enhances students’ understanding of the role of social justice in medical practice, recognition and eradication of implicit biases, and knowledge of the root causes of health disparities. This project led to the creation of a stepwise framework for curriculum development which includes short-term actions like standalone anti-racism trainings. The framework also emphasizes the need for longitudinal investment in curriculum advancement and advocates for the allocation of a dedicated curriculum officer to guide the implementation of these topics into WSUSOM’s four-year curriculum.

THE NATIONAL SHORTAGE OF EMERGENCY VETERINARIANS: A COMPETENCY-BASED SOLUTION

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Vetbloom | Ethos Veterinary Health

PURPOSE: An increasing national shortage of emergency clinicians has become a crisis in the veterinary profession. To address this challenge, we developed a competency-based training program that equips clinicians with skills required for a successful, sustainable, and rewarding career in emergency veterinary medicine. Our program was designed using an evidence-based approach to the development of a competency-based curriculum.

METHODS: To create the evidence and competency-based foundation for our program, we utilized a competency framework adapted from The Accreditation Council for Graduate Medical Education and The Model of the Clinical Practice of Emergency Medicine. In collaboration with the American College of Veterinary Emergency and Critical Care, we collected data using a hybridized Delphi technique to identify the specific veterinary skills that align with the competency framework and the types of cases emergency veterinarians frequently manage. We then applied the skills and case data to design an online “Train and Track” competency program that simultaneously teaches and records skill development to provide evidence for competency acquisition.

RESULTS: The iterative hybridized Delphi process identified 184 cognitive skills, 19 procedural skills, and 82 case types for the competency-based curriculum. The online “Train and Track” competency program incorporates a software-based skill tracking system to carefully monitor skill development in each competency category. Patient Care Competencies are developed with a custom patient care eLearning program in conjunction with case management. Targeted training for Communication/Interpersonal and Professionalism Competencies is delivered through a synchronous simulation platform.

CONCLUSION: We have established a competency-based program that prepares veterinarians for the rigor of working in the field of emergency medicine. Our hope is that this training program can be used to create a collaborative ecosystem of veterinary medical educators and instructional designers to further the development of this program and provide a solution to the national shortage of veterinary emergency clinicians.

PEER FEEDBACK AMONG INTERPROFESSIONAL ALLIED HEALTH STUDENTS DURING AN ONLINE ANATOMY COURSE

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PURPOSE: Giving and receiving constructive feedback is necessary for healthcare professionals, and the anatomy lab traditionally has provided an ideal environment to develop this skill. Due to the pandemic, an anatomy course for Allied Health students was shifted to an online format for lectures/labs. At the end of the course, students completed self and peer evaluations. The purpose of this study was to examine the quality and themes of this feedback.

METHODS: In the summer of 2020, Allied Health (physician assistant, occupational therapy, and physical therapy) students (n = 129) provided self and peer feedback consisting of rating rubric statements and sections for narrative comments on strengths and areas for improvement at the end of their online anatomy course. Rating rubric scores were averaged and analyzed using a two-tail, two-sample t-test. Narrative comments were quantified and themed.

RESULTS: Students rated themselves significantly lower than peers on evaluative questions assessing communication (3.76 vs. 3.57), teamwork (3.63 vs. 3.46), self-awareness (3.75 vs. 3.61), and preparedness (3.8 vs. 3.64), but not in regard to demonstrating responsibility and respect toward cadaver images (3.88 vs. 3.81) (p<0.05). Peer feedback
narrative comments referencing strengths were most associated with professionalism & leadership skills (~60%), followed by personal behaviors (~30%) and knowledge (~10%). Self-reflection strengths followed a similar pattern. Peer constructive feedback was more closely distributed between professionalism & leadership skills (~48%) and personal behaviors (~46%). Self constructive feedback followed a similar pattern, but individuals made more comments about their own knowledge deficiencies (17%).

CONCLUSION: Results indicate students evaluate themselves more critically than their peers and may be uncomfortable giving constructive criticism. Results from this online course are similar to what we have found when in-person. Understanding how students perceive themselves and others may give insight into methods to improve multidisciplinary communication within the healthcare setting.

SOURCES OF STRESS AND THEIR RELATIONSHIP TO STUDENT LEARNING IN THE HUMAN GROSS ANATOMY LAB

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PURPOSE: Cadaveric dissection plays a critical role in medical education. It not only promotes long-term retention of anatomy but also models clinical competencies. However, working in dissection small groups may provoke negative psychological reactions that can impact students’ experiences during lab. The purpose of this study is to explore sources of stress during dissections and their relationship to student learning in lab.

METHODS: At the end of Anatomy, first-year medical students (n = 106 out of 190) completed a survey consisting of multiple choice and Likert scale questions to assess their attitudes towards dissection at the beginning and end of the curriculum. Data was analyzed using paired t-tests. Students were also invited to participate in semi-structured focus groups (n = 14), with content analysis performed using the constant comparative method for theming and interpretation.

RESULTS: Approximately 86.7% of students felt some level of stress during an average dissection. The most commonly cited stressors at both the beginning and end of the course were confusion about instructions (21.1% vs 17.7%, respectively), time limitations (21.4% vs 19.7%, respectively), and difficulty finding structures (23.7% vs 28.3%, respectively), all of which significantly changed over time (p < 0.05). Concerns regarding working with cadavers significantly dropped from 3% to 0.4% over time (p < 0.05). Most focus group participants reported experiencing anxiety, but 80% discussed having improvement in confidence over time. Finally, most participants agreed or strongly agreed that dissection makes them think more critically about anatomy (80.2%) and that working with cadavers motivated them to form a better understanding of gross anatomy (81.1%).

CONCLUSIONS: This data suggests that extrinsic aspects of dissections pose a significantly greater and more sustained source of stress than psychological concerns related to working with cadavers. With this knowledge practical steps may be taken to improve students’ experiences and learning in lab.

CREATING AND IMPLEMENTING A COMPREHENSIVE AND CULTURALLY COMPETENT MEDICAL SPANISH CURRICULUM

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PURPOSE: The United States is a diverse country with many cultures and languages. Second only to English, Spanish is the most common language spoken in the US. Many Spanish speaking Americans are not fluent or do not speak English. Currently, there is a lack of dedicated curriculum to the care of this subset of the population. Further, the educational material available often focuses on Hispanic demographics in a ubiquitous manner not considering unique regional dialects and cultural idiosyncrasies. We developed a customized medical Spanish curriculum to increase cultural competency and patient outcomes for low English proficiency patients at the medical school level to mitigate these disparities. We developed both dialect and culturally specific sessions based on the predominant demographics in the Broward county area.

METHOD: We developed an elective that consisted of interactive sessions with community physicians who lead discussions on community health engagement with key Hispanic demographics. These sessions are paired with asynchronous activities to familiarize students with medical Spanish terminology and regionally specific cultural considerations. Students then engage in a standardized patient (SP) experience with a SP from the identified nationality. Pre and post course surveys were implemented with a focus on interest and course satisfaction.

RESULTS: Students were surveyed at the end of the course to identify overall satisfaction. 75% of course attendees and majority reported increased confidence in vocabulary, interviewing skills, and recognition of cultural contextual differences in patient care.

CONCLUSION: Medical students benefit from dedicated standardized patient encounters conducted in Spanish.
Students left the course with increased understanding of important concepts such as false fluency, cultural competency and an increase confidence interacting with a Spanish speaking patient. Our study shows a practical way to customize a Spanish medical education course that is scalable based on the fluency of the medical student.

**FACTORS IMPACTING THE RAPID TRANSITION OF ANATOMY CURRICULA TO A VIRTUAL LEARNING ENVIRONMENT**

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PURPOSE: Anatomy is traditionally taught using an in-person laboratory where students can physically interact with and learn from 3-dimensional specimens such as cadavers. Anatomy education has undergone many changes, including decreased contact hours and a push towards use of alternative methodologies, but predominantly remains a dissection-based, hands-on curriculum. Due to COVID19, education was forced to rapidly transition to a virtual model, dramatically impacting the structure of anatomy education. This study explored how the transition impacted anatomy faculty and identified factors that contributed to the difficulty of this curricular transition.

METHODS: A survey was developed and distributed via several online platforms to capture anatomy educators’ responses to COVID19. The surveys collected participant and institutional demographics, the educational response, and faculty perceptions from 165 individuals, using Pearson Chi-Square for comparisons.

RESULTS: In response to COVID19, 90% of institutions rapidly transitioned to a virtual format. Respondents indicated that transitioning the anatomy laboratory was significantly more difficult and time-consuming than transitioning lectures (p = 0.012, p = 0.030, respectively). The difficulty of transitioning individual lectures was impacted by the extent of online material pre-COVID (p = 0.004), the style of lecture delivery pre-COVID (p = 0.008), and having caregiving responsibilities during COVID (p = 0.017). Converting anatomy laboratory sessions was easiest for faculty who had taught for 10–20 years (p = 0.014). The transition of the entire anatomy curriculum was perceived to be harder if: respondents were female (p = 0.043), pre-COVID lectures were in-person (p = 0.012), lectures were didactic (p = 0.008), or laboratories primarily utilized dissection (p = 0.002).

CONCLUSIONS: Together these data indicate that transitioning anatomy curriculum to an online format was extremely challenging to educators. Pre-COVID curriculum delivery modalities had a significant effect on both the perceived difficulty of and required time to transition anatomy content to a virtual format. Future anatomy curricula design should evaluate proposed teaching modalities for their potential resiliency against unexpected disruptions.

**SELF-ESTEEM, SELF-EFFICACY, AND ACADEMIC PERFORMANCE IN FIRST-YEAR MEDICAL STUDENTS**

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PURPOSE: Medical students have varying degrees of self-esteem and self-efficacy, which may affect effectiveness as a student doctor and future physician. The purpose of this study was to analyze the relationship between self-esteem, self-efficacy, and academic performance in first-year medical students and to understand the factors that influence those areas.

METHODS: Medical students (n = 81 out of 190) completed a survey upon the conclusion of the first-year curriculum, which included the Rosenberg Self-Esteem Scale, the General Self-Efficacy Scale, and additional Likert and narrative questions. Academic performance was measured as the weighted average of each module from the curriculum. Pearson’s correlation coefficients were calculated to determine the relationship between self-esteem, self-efficacy, and performance. Additionally, Likert questions were analyzed, and content analysis was performed for the narrative questions.

RESULTS: There was no significant correlation for self-esteem (r = 0.031) or self-efficacy (r = 0.087) in relation to academic performance. Self-esteem fluctuation was reported as: never (1.3%), rarely (22.5%), sometimes (52.5%), very often (21.3%), and always (2.5%). Students reported these fluctuations were due to academic (47.30%), adjustment (28.38%), personal (12.16%), and social (2.70%) reasons. Self-efficacy fluctuation was reported as: never (8.8%), rarely (36.3%), sometimes (37.5%), very often (16.13%), and always (1.3%). These fluctuations were due to academic (40%), personal (19%), adjustment (9%), and time-management (3%) reasons. 48% of students reported their academic performance was affected by personal reasons (mental health, family, relationships), whereas 31% reported no external factors affected their performance. Academic reasons included comparison to peers and frustration of not seeing results despite effort.

CONCLUSIONS: Multiple factors affect medical students’ self-esteem and self-efficacy, with academic and personal
reasons being the most cited. These results may aid in developing an educational environment that aims to support students on a more personal level and to address academic concerns that negatively impact students.

SCIENCE AND ART OF MEDICINE INTEGRATED: SUCCESSFUL INTEGRATION OF BASIC AND HEALTH SYSTEMS SCIENCE WITH CLINICAL MEDICINE DURING CORE CLERKSHIPS

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PURPOSE: The need to integrate basic science and clinical medicine and expand education in the areas of health systems science (HSS) continues to be an area of growth and development within medical education. Core clerkships represent a learning venue in which students can experience the value of integrating basic science as they learn clinical medicine while also experiencing HSS in action. We created the Sciences and Art of Medicine Integrated (SAMI), a curriculum that integrates basic and HSS with clinical medicine.

METHODS: Core clerkship students meet weekly to integrate basic and HSS with clinical medicine using a patient case. Tools were created to facilitate integrating all three areas: the Context of Illness Tool and the Care Delivery Map. Within the Context of Illness Tool, students record patient details pertaining to four domains: biological, psycho-emotional, social, and systems/society. Basic science integration begins with creating a Mechanism of Disease Map. This map requires students to research the clinical features and causal mechanisms of a disease. Students then create a Care Delivery Map by superimposing patient details from the Context of Illness tool onto the Mechanism of Disease Map. This transforms a map of prototypical disease features to a map illustrating a patient’s unique relationship with the disease. Students utilize the Care Delivery Map to justify clinical decisions that require considering basic science and HSS in relation to the patient.

RESULTS: Utilizing these tools leads students to consider how optimal disease treatment requires appreciating the basic science, the why behind treatment, and HSS, the how of treatment. For example, the Care Delivery Map has allowed students to outline the treatment of obstructive sleep apnea including a patient-specific strategy for weight loss.

CONCLUSION: The development of SAMI provides one example of how to design a curriculum incorporating the three pillars of medical education.

GOOGLE QUIZZES: REAL-TIME FEEDBACK TO INCREASE STUDENT ENGAGEMENT AND ENHANCE THE VIRTUAL CLASSROOM

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PURPOSE: Modifying medical school curricula for remote settings in response to COVID-19 significantly impacted cadaver-based Gross Anatomy (GA) because the discipline emphasizes active learning, and interaction between faculty and students. Google Quizzes (GQs) incentivizes student engagement in a remote setting and addresses the loss of in-person evaluation of student comprehension. Typically, performance on weekly digital formative do not reach faculty; with GQs, professors can access student names and answers, and time of submission to track progress.

METHODS: GQs were created and taken on Google Forms, which automatically generates a spreadsheet of responses. Formative GQs had 3–5 questions on previous lab material, and stylistically reflected remote summative questions. GQs were administered to 210 MS1s throughout a 5-week musculoskeletal GA curriculum; nine 2–3 h labs over Zoom, in faculty groups of 35–37 students. At the start of each virtual lab, instructors placed the link into the chat for students. Faculty monitored responses as they were submitted, and reviewed each question, focusing on difficult questions/concepts.

RESULTS: Eighty-eight of 210 MS1s completed the survey. 75 percent of students “strongly agreed”/“agreed” GQs guided their studying; 62.5% “strongly agreed”/“agreed” GQs should be used in future GA units. Multiple students suggested making GQs available after the session for personal review. All responding faculty “strongly agreed” that GQs accurately reflected student understanding and helped tailor their lab talk.

CONCLUSION: Both students and faculty favor continued use of GQs in virtual and future in-person labs: GQs are a simple way to keep students accountable, increase engagement in a virtual classroom, and monitor formative progress. To determine if there was a significant impact on long-term retention/understanding, we will compare student performance on GQs to summative results.

E-Learning

THE GI SIMULATED CLINIC IN THE ERA OF COVID-19: A COMPARISON OF ONLINE TO IN-PERSON DELIVERY

S125
Chloe Ferris | Joel Bruggen | Jennifer Jackson | Donna Williams | E. Shen

Wake Forest School of Medicine | Wake Forest Baptist Medical Center

PURPOSE: The novel COVID-19 pandemic has significantly impacted medical education worldwide. Both preclinical and clinical medical student training have been affected, as social distancing measures have altered inperson learning activities including direct patient care experiences. There is a pressing need to better understand the effectiveness of virtual learning compared to traditional face-to-face learning.

METHODS: This is a single-center, cross-sectional study of first-year medical students at Wake Forest School of Medicine who attended a GastroEnterology Applied Clinical Skills (GEACS) Clinic in-person from 2018–2019 and online in 2020. A survey was taken by medical students to assess learner attitudes, which included questions about relevance, effectiveness, and activity format. Statistical analysis with SPSS software was performed to compare delivery methods.

RESULTS: 40 first-year medical students (27%) responded to the post-activity survey for the 2020 online delivery. The average rating for the online GEACS Clinic was 8.95 ± 1.09 in regard to overall effectiveness on a one-to-ten rating scale and 9.20 ± 1.01 for the in-person delivery. Independent sample T-test showed no statistically significant difference between these two delivery methods, t(93) = 1.16, p = 0.251. When asked about the effectiveness of the virtual standardized patient encounters for learning about telemedicine delivery, 82.5% of students rated it as extremely or quite effective. Additionally, 82.5% of students rated the effectiveness of the videoconferencing as a modality for learning the content presented as extremely or quite effective.

CONCLUSION: A well-designed online GEACS Clinic was comparable to the in-person event in regard to student satisfaction and perceived effectiveness. Students also found the online event to be an effective method to learn about telemedicine. Online learning modalities and telemedicine are essential to delivering medical education during the current COVID-19 pandemic as well as in the future due to the technological advancements of healthcare delivery.

TAMING THE WORKLOAD: AN EMPIRICAL APPROACH TO OPTIMIZING PREP MATERIALS FOR THE FLIPPED CLASSROOM

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PURPOSE: The flipped classroom is increasingly popular for fostering active learning and better learning outcomes. For a successful flipped experience student preparation is critical. Effective pre-class materials provide students with critical information without leaving them overwhelmed or confused. This balance can be difficult to achieve due to both the dense and time-compressed nature of undergraduate medical education in general, and the expert blind spot of faculty specifically. Here we provide an evidence-based framework for creating preparation material for flipped-classroom sessions, including guidelines for readiness assessment testing (RAT), strategies to achieve a manageable prep workload, and a framework for continuous improvement.

METHODS: Data were gathered in context of a 13-week flipped basic science course for first year medical students. Semi-structured interviews were conducted to define best practices for RAT. Self-reported data on workload were gathered via RAT and used to establish prep-time and workload goals and inform continuous improvement of prep resources. The utility of this approach was then tested at a different institution.

RESULTS: Workload was identified as a major challenge for students taking the first iteration of the flipped course. Using RAT to gather real-time feedback on workload enabled identifying best practices and achieving workload targets over several iterations of the course, which were then applied at a different institution.

CONCLUSION: Flipping the class presents many practical challenges for instructors. Leveraging RAT to gather real-time data on workload provided an evidence-based framework to assess the utility of preparation materials and carry out continuous quality improvement in different contexts, from small-scale pilot to large scale curricular reform.

TRAUMA 101: A VIRTUAL CASE-BASED TRAUMA CONFERENCE AS AN ADJUNCT TO MEDICAL EDUCATION

Randi Q. Mao | Takhliq Amir | Lucy Lan | Simon Farquharson | Eva Yiguan Liu | James Yan | Kevin Singh | Alexandra Allard-Coutu

Michael G. DeGroote School of Medicine, McMaster University | Department of Surgery, University of British Columbia | Department of Internal Medicine, University of Toronto | Department of General Surgery, McMaster University

PURPOSE: COVID-19 has impacted medical curricula, limiting simulation-based trauma education and surgical rotations. Virtual learning has been integrated as an alternative; however, its effectiveness for teaching critical concepts in
trauma has not been validated. Small-group sessions are an effective pedagogical model, yet it is unclear how they translate to online learning.

METHODS: Medical students were invited to attend a two-day virtual trauma conference organized by student interest groups at McMaster University and promoted on social media. A total of 360 students from over 17 medical schools in five countries registered. The event included nine interactive presentations by physicians and residents in five specialties, followed by small-group case discussions. A peak of 167 simultaneous connections during presentations and 68 connections during small-group discussions was recorded. A best-match algorithm assigned students to preferred small-group sessions. Participants completed pre- and post-conference testing and feedback questionnaires. Results were analyzed using paired t-tests and descriptive content analysis.

RESULTS: 131 students (36%) completed the pre-test with a mean score of 3.4/10 (SD = 2.04). 86 (24%) completed the post-test, with a mean score of 6.3/10 (SD = 2.3, p < 0.001). 73 students (20%) completed both tests. Paired t-test analysis revealed improvement by 2.7/10 (SD = 2.3, 95% CI = 2.17 to 3.23, p < 0.001). No correlations between education/school attended and performance were found. Social media engagement resulted in 147 posts. 37.4% were participant-generated. Live polling and moderated chats improved participation. 74% of participants agreed sessions were interactive. 95.2% agreed the online platform was effective and 78.3% endorsed the conference as helpful preparation for clerkship. 58.8% (40/68) completed the feedback for small-group sessions. 92.7% rated small-group discussions as effective.

CONCLUSIONS: With participant satisfaction and significantly improved post-test results, this model for trauma education is an effective pedagogical adjunct. Small-group case-based discussions and social media enhanced participant engagement.

DEVELOPMENT AND IMPLEMENTATION OF A SYNCHRONOUS ONLINE TBL USING MICROSOFT FORMS

Courtney Cross | Christina Robinson | Emily Todd

TCU and UNTHSC School of Medicine | UNTHSC Department of Pediatrics

PURPOSE: After transitioning to a virtual flipped classroom due to COVID-19, pre-clinical content application session facilitators noted decreased engagement in large group sessions. Faculty identified learning promotion, timely feedback, and maintaining the structure of team-based learning as goals in the virtual classroom. Thus, we developed a synchronous virtual team-based learning session using Microsoft Forms.

METHODS: We built separate quizzes for the iRAT, tRAT, and application exercises. We used question branching and point allocation to mimic the IF-AT cards in Forms. Data for the tRAT and application exercises was collated and graphed in Excel to promote large group discussion. Students were given a set of 5–7 application exercises to answer in Forms during small group work, then facilitators guided discussion in large groups. Therefore, we followed the significant problem, same problem, and specific choice guidelines for TBL.

RESULTS: Students identified increased engagement, more challenging questions, deeper learning, and ease of technology use as benefits to online TBL versus CBL. Faculty identified increased preparedness and engagement with the material.

CONCLUSIONS: We developed Forms and Excel templates, along with an Articulate Rise module for internal faculty use that is being modified for publication to our website. A main benefit of using Forms is its application after returning to the classroom. The platform is an easy way to collect and collate student data, and removes the need to purchase IF-AT cards.

PODCAST AS REVERSE MEDICAL EDUCATION

Andrea Martinez | Isabella Giunta | Anjali Jaiman | Colleen Beckford | Jessica Mineroff | Alexandra Greenberg | Tatyana Yatsenko | Chanelle Simmons

SUNY Downstate College of Medicine

PURPOSE: Medical education has failed to train physicians who can integrate an understanding of how racism and structural oppression shape biomedical knowledge and clinical practice. As the dual crises of police brutality and COVID have illuminated long-standing injustices in healthcare, students have played a central role in catalyzing and advocating for curricular change. At Downstate, White Coats For Black Lives identified three issues with current top-down, add-on efforts to integrate health disparities into medical education: absence of community voices, failure to promote creative problem solving skills, and an overall anemic response to current events.

METHODS: In order to address these deficiencies, students created a podcast called Between the Lines: Everything Your Medical School Didn’t Teach You About Health Justice as a model of applied and responsive health disparities education. We have found the podcast to be a true practice-based learning modality. Students identify an episode theme in response to clinical experiences or current sociopolitical crises. Students brainstorm questions, do background and
historical research, and identify a community organizer or health justice activist currently working on a project or policy related to the episode theme. Finally, students imagine possible solutions to improve clinical education and patient care.

RESULTS: The first podcast focused on the topic of police response to mental health crises in New York City. The second podcast will focus on healthcare in the prison system. CONCLUSION: Although the interview structure of the podcast allows for only one community voice to be highlighted per topic, learning from someone with expertise and with a lived experience provided a perspective not rooted in academia. This allowed us to learn about the practical realities of implementing change and imagine transformative models of health and healthcare that would not have been considered in a traditional didactic setting.

ARE YOU READY FOR MEDICAL SCHOOL? DEVELOPMENT OF A DISCIPLINE-BASED ONLINE PRE-MATRICULATION CURRICULUM TO BOOST STUDENT READINESS

Joshua Alger | Jae Kye | Lokesh Nagineni | Cynthia Perry | Jessica Chacon | Houriya Ayoubieh | Ricardo Belmares | Tanis Hog | Curt Pfarr | Ellen Dudrey | Dale Quest | Herb Janssen | Martine Coue | Jorge Cervantes | Edith Olexiuc | Diego F. Nino

Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center—El Paso, TX 79,905

PURPOSE: A growing interest exists to provide medical students with pre-matriculation learning resources to fill in knowledge gaps and help them improve academic outcomes during the pre-clerkship phase. It remains unclear how such a program should be developed and implemented. We hypothesized that providing a discipline-based online pre-matriculation course (PMaC) would help to mitigate weaknesses in students’ basic science knowledge and result in improved academic performance.

METHODS: Discipline-based, multimedia-rich Online Learning Modules (OLMs) were accessible to all matriculants (Class of 2024, n = 116) for the academic year 2020–2021. Participation was voluntary. OLMs focused on Anatomy, Cell Biology & Biochemistry, Physiology, Immunology, Histology and Pharmacology. Topics were identified based on historically low performance in formative and summative assessments delivered during the first unit of the Scientific Principles of Medicine course (Introduction to Health and Disease - IHD). Effectiveness of each OLM was determined using pre- and post-module assessments. The correlation of OLM completion and performance on the IHD summative exam (consisting of a customized NBME assessment) was analyzed. Multiple regression analysis was used to examine the role of OLM engagement on academic performance versus other variables such as MCAT scores. Student feedback was collected anonymously using surveys delivered after the completion of the PMaC and the summative exam.

RESULTS: Out of 116 matriculants, 89 (77%) completed one or more OLMs. A significant improvement in performance (average increase: 24.97% p < 0.0001) was observed with all modules except one (histology 7.02%). The number of OLMs completed, and performance on the modules had a positive correlation with IHD summative exam scores (r2 = 0.139). Student surveys demonstrated a high satisfaction rate (92%) for the usefulness of the PMaC and the opportunity to identify and fill knowledge gaps.

CONCLUSION: Our study demonstrates the value of providing discipline-based, online, pre-matriculation instructional materials to help students prepare for the rigor of medical education.

CAN SELF-REGULATED LEARNING THEORY GUIDE LEARNING TASK DESIGN?

Michael Allen | Todd Cassese

The Mount Sinai Hospital System | The Albert Einstein College of Medicine

PURPOSE: The benefits students derive from utilizing the steps Self-Regulated Learning (SRL) Theory are extensive. The degree to which students innately employ these steps and whether learning formats influence the specific steps utilized is less clear. This retrospective study examined how students utilized and valued components of the SRL Theory when completing mandatory online modules for a systems-based course.

METHODS: An anonymous, electronic survey was sent to all 3rd/4th year students at Albert Einstein College of Medicine to assess students’ experience of online lectures. The survey assessed whether students utilized the steps of the SRL Theory, their perceived value of utilized steps, and the degree to which students innately employ these steps. Student utilization and value of SRL steps were examined with all modules except one (histology 7.02%). The number of OLMs completed, and performance on the modules had a positive correlation with IHD summative exam scores (r2 = 0.139). Student surveys demonstrated a high satisfaction rate (92%) for the usefulness of the PMaC and the opportunity to identify and fill knowledge gaps.

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Strategizing ($p < 0.028, \phi = 0.21$) and Reflection ($P < 0.041, \phi = 0.19$). Conversely, students who did not Plan were more likely to perceive planning as valuable compared to those students who did Plan ($p < 0.005, \phi = —0.27$).

CONCLUSION: Most students that did not utilize steps of SRL Theory responded that it would have been useful to have done so after simply being introduced to that step in the survey. Our results suggest that for mandatory online lectures, performance tasks are more readily a part of students’ study repertoire. Adding or modifying the learning task to a modality with higher engagement could rectify this.

**Instructional Methods**

**MULTI-INSTITUTIONAL PHYSICIAN ASSISTANT STUDENT PERCEPTION OF SIMULATED EMERGENCY ROOM CASES**

Ashley Bell | Joy A. Dugan-Moverley | Nicole B. Reichhart | Erin Salcido

CSUMB PA Program

**PURPOSE:** Physician Assistant (PA) students are often required to participate in the management of multiple patients during their clinical rotations. However, many are uncomfortable and lack confidence in their ability to manage more than one patient at a time. One method of preparing students for clinical experiences is through simulation. This study evaluates the effect of simulation on PA student confidence in managing multiple patients in an ER setting.

**METHODS:** The faculty from four PA programs collaborated on case development and simulation design. Each institution delivered the emergency-based simulation over four days. The students were either placed in small groups as providers or prepared as standardized patients. The providers were expected to triage and assess four standardized patients within an hour. The students rotated roles throughout the simulation days. After performing a history and physical exam, the students presented the case to their faculty proctor, ordered diagnostic studies, and interpreted the results appropriately. Providers determined the most likely diagnosis, decided on patient disposition and an appropriate plan. Students were debriefed with faculty after each simulation day. Pre and post surveys evaluated the emergency medicine experience.

**RESULTS:** 134 students completed both the pre and post-tests. There was a statistically significant increase in confidence in emergency patient scenarios. The students improved their ability to perform a medical history, order and interpret diagnostics, and prioritize patients.

Students praised their experience working with their peers (4.41 ± 0.71) and debriefing (4.54 ± 0.69).

**CONCLUSION:** Emergency medicine simulation improved the student’s overall confidence as well as their perceived ability to manage multiple ER patients. By providing a safe, controlled environment, students were able to apply their clinical reasoning skills, thus increasing their confidence and better preparing them for clinical rotations.

**EFFECT OF A LEARNING SPACE ON ENGAGEMENT IN ACTIVE LEARNING AND ACADEMIC PERFORMANCE**

Youngjin Cho | Gabi N Waite | John L Szarek | Tonoya Sengupta

Geisinger Commonwealth School of Medicine | St. George University

**PURPOSE:** Research examining the effects of student-centered learning space on academic achievement has been confounded by the simultaneous introduction of a change in pedagogical approach. We measured the impact of learning space on students’ learning while keeping the utilization of active learning pedagogies constant.

**METHODS:** Our organ systems course for MD2 has been taught as a flipped classroom in a traditional lecture-hall classroom. In the 2019 academic year, students ($N = 114$) were in the lecture hall for the first semester. In the second semester, students moved into a remodeled learning space designed to enhance the group interaction for 10 weeks, then online for 4 weeks with the COVID-19 pandemic. We measured the effect of the three learning spaces on two domains of students’ learning: a) academic performance, for which we compared scores of the same assessment items to historical data from the previous class, and b) engagement for active learning, for which students completed a validated 16-question survey (Assessing Student Perspective of Engagement in Class Tool; ASPECT, Wiggins et al., 2017).

**RESULTS:** There was no statistically significant difference in academic performance between the three learning spaces when compared to historical data. Preliminary statistical analysis of the effects of learning space on student engagement, with the ASPECT survey responses (50% response rate), suggests that learning space, especially online, does impact aspects of engagement related to the recognition of the personal effort made toward the learning.

**CONCLUSION:** We conclude that students’ academic performance primarily depends on the consistent application of active learning methodologies. Therefore, the use of effective instructional strategies and alignment of instructional activities should be prioritized over physical space renovation or
online platform development as an improvement strategy. The online environment, however, may enhance students’ engagement in active learning with an increased sense of personal contribution to learning activities.

**USING AN ESCAPE ROOM ACTIVITY TO ORIENT LEARNERS TO THE SIMULATED MEDICAL ENVIRONMENT**

Aimee T. Martin, MD | Sarah Gibbs, MS | Casey N. Bassett, PhD | Julie K. Gaines, MLIS | Matthew A. Boegehold, PhD

AU/UGA Medical Partnership

PURPOSE: Simulation is frequently used in U.S. undergraduate medical education to provide experiential learning opportunities to students. Preclinical medical students typically have limited experiences in a clinical setting and most have never been exposed to simulation in education, posing significant hurdles to their learning when placed as active participants into a simulated patient environment. Based on feedback from learners who participated in a novel simulation curriculum at our institution the previous year, we developed an escape room activity to familiarize students with the simulated medical environment in order to prepare them for future simulated patient encounters.

METHODS: The escape room was based on a routine patient follow-up visit in a clinical setting. 20 groups of 4–5 students solved healthcare-related puzzles in the room, revealing codes that opened a series of locked boxes containing clues that advanced them through the activity. Team performance was measured by completion of 13 critical actions, as well as by the time needed to escape the room. Basic and clinical science faculty participated as manikin operators and facilitated small group debriefing upon completion of the activity. Students completed two surveys, one immediately following the escape room activity and a follow-up survey after completing their first immersive simulation case.

RESULTS: 89 students participated in the escape room activity, with 67 completing the initial feedback survey, and 44 completing the follow-up survey. Team times ranged from 27 to 47 min, with one group failing to complete the activity. Feedback received from students was extremely positive, with 86% rating the activity as Highly Effective or Very Effective in preparing them for participation in a simulated patient case.

CONCLUSION: Using an escape room activity to provide a hands-on introduction to the medical simulation environment was effective in preparing and fostering confidence in preclinical medical students for participation in a simulated patient case.

**PERCEIVED EFFECTIVENESS OF VIRTUAL SIMULATION FOR HEALTH PROFESSIONS EDUCATION**

Alison Krueger | Kathleen A. Weiss | Nehad El-Sawi

Des Moines University

PURPOSE: The Iowa Simulation Center at Des Moines University adapted to the COVID-19 crisis by converting from in-person to virtual delivery methods. This study examines the perceptions of virtual training by students, faculty, and staff on simulation activities.

METHODS: An explanatory mixed-methods study was conducted, first with statistical quantitative analysis of survey data followed by thematic analysis of qualitative survey response data. Finally, the qualitative themes were used to explain the quantitative findings. Participants included: students from the College of Osteopathic Medicine, College of Podiatric Medicine and Surgery, and Physician Assistants, clinical faculty, standardized patients, and simulation center staff.

RESULTS: Initial findings indicate that most participants preferred traditional, in-person simulation (71%) over virtualized simulation delivery (12%). Traditional delivery was easier to participate in, more engaging, and greater overall satisfaction. Students and faculty had stronger preferences for traditional delivery, but simulated patients and simulation center staff saw merit with both delivery options. Group-level thematic analysis is currently underway and will be completed by the conference date. Some emerging themes include convenience, safety, and the ability to practice psychomotor skills.

CONCLUSIONS: Survey responses captured the impact of COVID-19 beyond education delivery using simulation. Psychomotor skill acquisition was more favorable in the traditional method, which has guided plans to return to campus. Variability has been observed within student groups based on the extent of their virtual simulation experiences. Continuing qualitative analysis will further elucidate the findings.

**IMPACT OF LIVE CLASSROOM VERSUS ZOOM DELIVERY OF LECTURES ON STUDENT PERFORMANCE IN MEDICAL BIOCHEMISTRY AND GENETICS**

Raquel P. Ritchie | Martha A. Faner | Carol A. Wilkins | Kirsten L. Waarala

Michigan State University College of Osteopathic Medicine

PURPOSE: Due to the COVID-19 pandemic, medical schools nationwide moved quickly from face-to-face to online instruction. The faculty at Michigan State University
Providing Global Health Perspectives to Medical Students Through a Study Abroad Program in India

Harald M. Stauss | Catherine Vu | B. Kannan | P. Sundarraj

Burrell College of Osteopathic Medicine, Las Cruces, NM 88,001, USA | Meenakshi Mission Hospital & Research Center, Madurai, Tamil Nadu, India

Purpose: The missions of Burrell College and MMHRC are both focused on reducing barriers to health care in the respective geographic regions, including shortness of health care providers, prohibitive health care costs, and long travel distances to health care centers. The learning objectives of this international collaboration were (1) to contrast approaches to overcome barriers to health care in the US with those in India; (2) to gain a deeper understanding of the social and cultural issues surrounding patient care; and (3) to enhance perception of issues affecting community health.

Methods: A collaboration was established between Burrell College and MMHRC. A preceptor, appointed by MMHRC, oversaw the clinical education, and provided shadowing opportunities in various clinical departments. Community health experiences included visits of (1) a leprosy relieve center where students interacted with former patients; (2) a rural clinic, connected to MMHRC via telemedicine; (3) an elementary school where schoolteachers also serve as medical triage; (4) a mental health center, focusing on lifting the social stigma on mental illness; and (5) a nursing college where students educate communities on issues like HIV prevention and safe drinking water. Assessment of learning objectives occurred through weekly reflections and a final report.

Results: The 4-week program took place in February/March of 2020 and was limited to 4th year Burrell College students. Students stayed at a hotel located on the secured MMHRC campus. Average total cost was $5,000/student (50% covered through fundraising by Burrell College). Student feedback included: “I gained a deeper understanding of the social and cultural issues surrounding patient care” and “The community outreach experiences further enhanced my perception of the issues that affect the health of the community as a whole”.

Conclusion: This program provides a valuable, enriching, and memorable learning experience for medical students with an interest in global medicine.

Team Charter: Improving Teamwork to Facilitate Gross Anatomy Dissection Group Function

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Virginia Commonwealth University School of Medicine

Purpose: Gross anatomy is a foundational course in medical education. Courses that involve laboratory dissection also typically include student groups to perform assignments and study together. Past experience has shown that while many dissection teams are successful, some devolve into various levels of dysfunction reflected by low group morale and coordination. The present intervention was initiated to examine the hypothesis that if given explicit guidance for teamwork and the expectation to demonstrate well-known features of team functioning, then the incidence of groups exhibiting good morale and coordination would be enhanced.

Methods: The intervention consisted of several components. First, faculty were given a tutorial on the features of teamwork and how they might apply to student dissection.
teams. Next, the “Team Charter” document was created which detailed team expectations and was assigned for each team \( (n = 32) \) to complete before the first dissection exercise. This document posed specific questions about team goals, task assignment, conflict resolution, review and acknowledgement of participation. Halfway through the course, the Team Charter document was revisited using a brief questionnaire to evaluate its implementation and effectiveness to date. Last, an end-of-course evaluation was used to assess student opinions of the Team Charter intervention.

RESULTS: Responses to the evaluation showed that within group participation was comprehensive and that the most effective component of the exercise was the establishment, at course onset, of individual roles and expectations within the team. Post-course faculty assessment of the dissection groups failed to identify any dysfunctional teams \( (0/32) \) using the criteria of morale and coordination.

CONCLUSION: We conclude that a priori identification of clearly defined team expectations helps to reduce/mitigate team dysfunction in the gross anatomy laboratory. Ultimately, mutual agreement about team expectations can contribute to more equitable, well-performing dissection teams, which has positive implications for their future clinical practice.

**DRAWING INSIGHT FROM MEDICAL STUDENT DRAWINGS**

Deborah A. Barany | Eve Gallman | Ariel J. VanLeuven | Logan Fiorella

Augusta University/University of Georgia Medical Partnership | University of Georgia

PURPOSE: Learning anatomy by drawing is a commonly used strategy, but its effectiveness in supporting learning and retention of concepts related to function is less well studied. We tested the effects of generating drawings on medical students’ understanding of concepts in neuroscience, irrespective of the topic.

METHODS: First-year medical students \( (N = 33) \) completed two learning activities that emphasized a recently introduced topic from the core neuroscience curriculum (motor control of face or adaptations to changes in cerebral vasculature). Students responded to a prompt by either generating drawings on a tablet and explaining their drawings aloud (Draw-and-Explain) or generating a list of pertinent facts related to the prompt (List). Topics were counterbalanced across learning activity. Students were tested on their understanding of both topics on a posttest one week later. Additionally, we asked students about their perceived understanding of each topic, their self-assessed performance on each activity, and their opinions on the utility of the learning activities as study tools.

RESULTS: Preliminary data show a significant interaction between drawing and learning outcome \( (F(1,31) = 6.64, p = 0.02) \). For both topics, student posttest performance was higher if they had drawn, rather than listed, during the activity in the previous week. Drawing accuracy as assessed by faculty and students’ self-ratings of understanding were both positively correlated with posttest performance. Ninety-four percent of students reported that the Draw-and-Explain activity helped improve their understanding of the topic while only 76% found the List activity helpful. All students responded that drawing is a useful learning strategy.

CONCLUSIONS: Our results suggest that drawing is a beneficial learning strategy for medical students who are learning core concepts in neuroscience, irrespective of the topic. Furthermore, this study highlights the benefits of using student drawings within a formative assessment to provide a window into student understanding and gaps in knowledge.

**TEACHING PEDIATRIC PHYSICAL DIAGNOSIS IN A VIRTUAL SETTING**

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PURPOSE: The COVID-19 pandemic limited medical students’ ability to rotate in clinical settings; many institutions suspended in-person teaching of pediatric physical diagnosis (PD). However, students feel least prepared for the pediatrics clerkship due to lack of exposure in the pre-clerkship environment. To address this gap, we created a virtual PD curriculum seeking to meet the same objectives as our traditional in-person curriculum.

METHODS: Small-group Zoom sessions were conducted with groups of 5–6 M2 students, facilitated by both a fourth-year medical student with an interest in pediatrics and a member of pediatrics faculty. Learning materials consisted of slideshow didactics, resident-made instructional videos, and vignettes testing clinical reasoning.

RESULTS: Last year’s in-person and this year’s virtual curriculum had positive feedback without significant difference in the proportion of medical students who valued the session \( (97\% \text{ vs } 94\% \text{ respectively}; p = 0.08) \). Post-test results on a four-question quiz improved after initiating the virtual curriculum \( (90\% \text{ vs } 98\% \text{ correct}, p < 0.01) \). A majority \( (58\%) \) of students in the virtual curriculum were in favor of hybridizing future PD sessions by including a virtual component into the traditional in-person curriculum. Students in the virtual curricula more accurately identified unique components...
of pediatric H&P than those participating in the in-person curriculum.

CONCLUSION: Pandemic education requires creative modifications of preexisting curricula to safely meet students’ needs. We propose that the standardization afforded by a virtual curriculum could overcome the inherent variability of in-person pediatric physical diagnosis with real patients. Our experience provides insight into effective ways to bridge the pre-clerkship pediatric knowledge gap, inspiring excitement about pediatric medicine.

VIRTUAL ROLE PLAY IMPROVES CLERKSHIP STUDENT CONFIDENCE IN NUTRITION COUNSELING

Michele Wong | Alexis Rivera | Crystal Marquez
State University of New York Downstate Medical Center College of Medicine

PURPOSE: Many medical trainees feel inadequately prepared to provide nutrition care according to recent surveys amid recommendations to increase total nutrition instruction hours in medical schools. We aimed to strengthen clerkship student confidence in providing nutrition counseling through a single virtual experience.

METHODS: Between July and November 2020, 104 clerkship medical students were offered two 90-min nutrition sessions during the Primary Care Clerkship at a single medical school. The sessions were hosted approximately every three weeks on the Zoom platform using breakout rooms. These consisted of an ‘Introduction to Nutrition’ lecture and three case-based application exercises. Following the flipped classroom model, students were provided relevant pre-class reading and randomly grouped into triads to demonstrate nutrition counseling using motivational interviewing strategies via role play. After the role play, students received immediate peer feedback using a standardized rubric. A whole-class discussion followed each application exercise to examine challenges and strategies learned within the triads. A survey was administered before and after the sessions to assess student confidence in various domains via likert scale. Statistical significance was determined at P < 0.01 and measured using the Wilcoxon signed-rank test.

RESULTS: 82/104 (78%) students attended both the nutrition lecture and application exercise sessions. Of the students who attended both sessions, 100% completed both pre- and post-test surveys. Students reported significantly increased post-test confidence in initiating a diet assessment and fitting basic dietary counseling into patient encounters. Students additionally reported significantly increased understanding of common diets and improved confidence in teaching patients about diet during nutrition counseling.

CONCLUSIONS: A single virtual experience strengthened clerkship medical students’ confidence in providing nutrition care. As a result of student response to these sessions, we will recommend that all members of the third year medical school class complete the two-part nutrition virtual experience during the clerkship year 2020–2021.

STRATEGIES FOR MAINTAINING CLINIC-BASED INTERPROFESSIONAL TEACHING IN A PANDEMIC AND BEYOND

Denise Zwahlen | Shelley Bhattacharya
University of Kansas Medical Center

PURPOSE: Due to the COVID-19 pandemic, clinical teaching sites at the University of Kansas Medical Center (KUMC) were temporarily closed, as were many teaching sites around the globe. Re-opening the geriatric interprofessional (IP) teaching clinic required developing a strategy to assure public health measures were followed to protect patients, students and faculty. Addressing an IP team practice posed a challenge due to the number of team members and the space needed to achieve social distancing. Each faculty member used their unique perspective to: 1) enforce safety guidelines such as maintaining 6 feet of distance whenever feasible, 2) safely allow students from three disciplines to evaluate patients, and 3) reinforce the importance of core concepts of IP care: communication, roles and responsibilities, teams and teamwork, and values and ethics.

METHODS: IP team members reviewed CDC, KUMC and local health department guidelines; surveyed the clinic and precepting spaces and resources available; proposed a revised IP clinic protocol and received approval to allow for resumption of IP clinical visits. Student feedback was encouraged with each debrief.

RESULTS: Two new conference rooms were repurposed for precepting with tables rearranged to assure safe distancing for students to discuss cases together and present to preceptors. Clinic rooms were limited to four persons. Video conferencing was offered to enhance participation with limited space or personal preference. Video conferencing also allowed for closer supervision of students during visits by precepting faculty. Students enjoyed the video option and felt included in the clinical teaching encounters.

CONCLUSIONS: Using our collective expertise our IP team developed strategies to maintain IP clinical teaching in the COVID-19 pandemic and beyond. The use of video conferencing afforded better access for students during the clinical interactions as well as for preceptors. It is likely this will be maintained to some degree following the pandemic.
ESSENTIALS OF DEVELOPING AN INDEPENDENT LEARNING SESSION

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PURPOSE: With recent curricular revisions, medical schools promote independent learning by assigning self-directed learning modules to students to complete. However, in many instances, particularly in the pre-clinical years, student dissatisfaction with self-directed learning (SDL) modules have made self-directed sessions less effective. This study evaluated the independent learning sessions in a pre-clinical curriculum to determine the essential elements necessary in a self-directed learning module to support learning.

METHODS: We used Kern’s six-step approach to curriculum development to evaluate independent learning sessions. This model was applied to identify, analyze, and seek solutions to the problem (Bass, 2016). We then outlined twenty-nine essential elements for developing self-directed learning modules. We inferred these elements from assumptions of andragogy explained by Knowles (Merriam, 2001), principles of self-directed learning (Glancy, 2011; Porter, 2020), and best practices for designing presentations (Yelon, 2012). Finally, we reviewed the independent learning sessions to determine which of the twenty-nine elements were present in sessions rated high by students.

RESULTS: Out of 47 independent learning sessions, only seven sessions (14.9%) were rated as excellent by student raters. Sessions with high ratings displayed most of the essential elements for self-directed learning. We identified eleven elements that were often missing in sessions rated poorly by students. Limited autonomy for learning, lack of opportunities to practice, and limited probabilities for applying knowledge to practice and creating meaning from the learning experience were some concerns.

CONCLUSIONS: Self-directed learning is an essential skill for adult learners. With ever-expanding medical sciences, acquiring necessary skills today is vital for students to become life-long learners and competent physicians of tomorrow. Considering the essential elements in a self-directed learning module while developing such modules should improve instruction quality and help student learning.

INSTRUCTIONAL DECISION MODEL: A BACKWARD DESIGN APPROACH FOR FACULTY DEVELOPMENT

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PURPOSE: Evidence-based instructional decisions have an impact on student learning. Poor instructional decisions by the faculty directly affect the learner’s performance. Instructional Decision Model (IDM) is a backwards design approach to empower faculty to make better instructional decisions such as what to teach (curriculum), how to teach (instruction), and how to evaluate learning (assessment). The Model and the MS-Word template guided the faculty to develop an effective and efficient Team-Based Learning (TBL) module on a topic of their choice.

METHODS: As part of the faculty development training, 10 junior faculty members were selected to join an online program called “Instructional Decisions”. The program used MS Team and Blackboard learning management system (LMS) for synchronized and asynchronized sessions during the COVID pandemic. The main goal of the program was to empower faculty to make the best instructional decisions based on evidence-based best practices including Curriculum, Instruction and Assessment with a peer-to-peer and mentoring approach. First five weeks of the program consists of weekly synchronized online sessions (1 h 30 min). During the synchronized sessions, different topics were introduced to the participants (e.g., Instruction & Learning, Curriculum Analysis, Bloom’s Taxonomy etc.). During the last five weeks, each participant started to meet with a TBL expert/mentor in One-on-One meetings to receive constructive feedback on the module they are developing.

RESULTS: As a result of the training and the use of IDM and workbook, junior faculty members were able to write measurable learning objectives both in lower and higher levels of Bloom’s Taxonomy, prepared the instructional materials with reading guides, readiness assurance questions and application level questions based on the 4S frame work.

CONCLUSION: The Instructional Decision Model (IDM) and the workbook provided a road map to make best decisions in the development of a TBL module. The session provides examples of TBL modules that faculty had developed using the IDM and the reflective feedback from the junior faculty members who participated in the program.

THE IMPACT OF SOCIOECONOMIC FACTORS ON MEDICAL SCHOOL ACCEPTANCE RATES

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Other
PURPOSE: Seventy-five percent of medical students hail from families in the top two income quintiles as defined by the US Census Bureau, while 5% of students represent the bottom quintile. This study examines U.S. medical school acceptance rates across familial income and parental education levels and identifies applicant factors predictive of medical school acceptance.

METHODS: AMCAS de-identified data were obtained for all medical school applicants from 2014–2019. Descriptive statistical analyses assessed acceptance rates, MCAT averages, and GPA averages, stratified by applicant’s family income and parents’ education. Low-income was defined as reporting a childhood family income <$75,000, and first-generation status was defined as having no parent with a bachelor’s degree. Multivariate regression analysis modelled effects of MCAT, GPA, race/ethnicity, first-generation status, and low-income status on acceptance to at least one MD program.

RESULTS: AMCAS data from 312,898 applicants were analyzed. The overall acceptance rate over the study period was 42.3%. Low-income applicants and first-generation applicants’ acceptance rates were 36.0% (38,674/107,396) and 32.7% (19,701/60,328), respectively. On univariate analysis, acceptance was negatively associated with family income (OR: 0.602, \(p < 0.001\), CI: 0.592, 0.612) and parental education (OR: 0.581, \(p < 0.001\), CI: 0.570, 0.592). On multivariate analysis, among those with MCAT2015 scores (\(n = 142,961\)), medical school acceptance was most affected by average science GPA (OR: 6.63, \(p < 0.001\), CI: 6.345, 6.918), UIM identity (OR: 5.119, \(p < 0.001\), CI: 4.923, 5.323), and MCAT score (OR: 1.186, \(p < 0.001\), CI: 1.184, 1.189). Low-income status (OR: 0.968, \(p < 0.05\), CI: 0.938, 0.999) was negatively associated with acceptance; however, first-generation status (OR: 0.994, \(p < 0.758\)) was not associated.

CONCLUSION: The large negative associations of low parental income and education are overshadowed but mediated by performance scores. These results suggest this student population could benefit from early mentoring and interventions to improve their likelihood of medical school acceptance.

THE COVID-19 PANDEMIC’S IMPACT ON STUDENTS AT MSUCOM: CURRICULUM, ADVISING AND WELLNESS

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Michigan State University

PURPOSE: The purpose of this study was to assess the impact of the pandemic on medical students at Michigan State University College of Osteopathic Medicine (MSUCOM), with respect to their academic success, access to advising, and wellbeing. We sought to identify lessons that might lead to improved online curriculum delivery and student wellbeing during the ongoing pandemic and into the post-pandemic future.

METHODS: A 42-question Qualtrics survey was designed to capture feedback from preclerkship students (OMS-I and OMS-II) at MSUCOM regarding how curricular changes, in response to COVID-19, have affected them. It was composed of multiple choice, select all that apply, Likert and open-ended questions. Likert-scale questions used a five-point scale.

RESULTS: The response rate was 36% and 83% of respondents completed the survey. There was a noticeable decrease in satisfaction after the transition to an online curriculum (mean before: 3.9, std deviation: 0.8) (mean after: 3.2, std deviation: 1.1). Positives of an online curriculum were noted to be pre-recorded lectures and not having to commute. Negatives were a lack of focus, structure, and accountability. When asked about study habits, approximately 64% (122/192) of students studied outside the home prior to the transition and had to adapt to studying from home. There was a significant increase in the amount of time that students were distracted from learning activities after the transition (mean before: 2.1, std deviation: 0.9) (mean after: 3.1, std deviation: 1.1). On topics of wellness, students overall reported feeling isolated “sometimes” (mean: 2.4, std deviation: 1.0). 105 students selected that their wellness was somewhat or dramatically worse.

CONCLUSION: Our survey has offered significant insight into features of an online curriculum that lead to success. This is important as we continue to face a global pandemic. It is also relevant post-pandemic as online elements in curriculum become more common.

SUMMER COLLEGE ACADEMIC ENRICHMENT PROGRAMS ROLE IN DEVELOPING THE EMERGING PHYSICIAN WORKFORCE

Douglas Grbic

AAMC

PURPOSE: Many summer college academic enrichment programs (SCAEPs) are intended as pathways for increasing US medical student diversity and developing the future physician workforce. We examined the prevalence, characteristics, and career intentions of SCAEP participants and non-participants among US medical students, stratifying SCAEP participants by participation in the Robert Wood Johnson Foundation Summer Medical and Dental Education Program (SMDEP), a national premedical program.
METHODS: Using Association of American Medical Colleges (AAMC) data for all US medical-school matriculants nationally in 2013–15, we examined matriculants’ responses to the AAMC’s Matriculating Student Questionnaire (MSQ) item “Do you plan to work primarily in an underserved area?”. We examined data for matriculants who graduated by 2019 and responded to the AAMC Graduation Questionnaire (GQ) item “Do you plan to work primarily in an underserved area?”. The key explanatory variable for all analyses is participation in a) SMDEP b) other SCAEP (excluding SMDEP) or c) no SCAEP participation. Multivariate models included demographic characteristics and various medical school experiences.

RESULTS: Among 74,989 matriculants with complete data, 1.2% were SMDEP participants, 13.1% were other-SCAEP participants, and 85.6% were non-participants. 77.0% of SMDEP participants were of racial/ethnic groups historically underrepresented in medicine, as were 26.1% of other-SCAEP participants and only 14.9% of non-participants. In multivariate analyses, SMDEP participants (versus non-participants) were more likely to have sustained career intentions (re-affirmed at graduation) to work primarily in underserved areas (adjusted odds ratio [aOR] 1.9); these career intentions for other-SCAEP participants did not differ from non-participants (aOR 1.1).

CONCLUSION: Medical school SCAEP programs help to increases US medical schools’ applicant and matriculant racial and ethnicity diversity. Matriculation of SMDEP participants, in particular, advances efforts of US medical schools to recruit and educate students whose sustained career goals explicitly align with national healthcare needs to increase access to care in underserved communities.

COVID-19’S IMPACT ON ANATOMICAL DONOR PROGRAMS -THE SWELL OF THE WAVE

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Eastern Virginia Medical School

PURPOSE: Anatomy is often considered the backbone of medical sciences through which trainees acquire a basic foundation to build clinical understanding. As such, cadaveric dissection has been an integral tool for anatomy teaching and learning for centuries. To determine the impact of Covid-19 on anatomical donor procurement, we surveyed all US donor programs to determine the extent of closure, parameters for accepting donors and potential consequences of availability of donors.

METHODS: US Anatomical Donor Programs were contacted from May 15 to July 30 of 2020. Participants were asked a series of eight yes/no or open-ended questions related to the status of acceptance of donors, criteria for acceptance, new restrictions, academic prioritization of donors and predicted shortages.

RESULTS: Data was collected from 77 programs (67% response rate) representing all US regions and 37 states. At the time of the survey, 80% of program respondents were still taking anatomical donors of which 82% of them had adopted new guidelines for acceptance. These changes resulted in ranges of donors lost from 1–50% which amounts to slightly greater than 750 individuals. Contrary, six respondents expressed serious concerns about an abundance of donors and lack of storage given that their schools either closed or shifted to virtual learning. Only 6% expressed concerns about not having enough donors to supply other health professions programs’ educational needs. Others anticipated that the shortage would negatively impact the number of non-preserved or lightly embalmed donors used for surgical training of advanced students and residents.

CONCLUSION: Given the importance of cadaveric donor material for all levels of anatomy teaching, the long-term supply of donors is of concern as a result of this pandemic. This study represents only a glimpse into the first wave of the impact of Covid-19 on anatomy education. The swell will likely grow.

A MULTICULTURAL EXPERIENCE IN A CONFLICT ZONE. WHAT MEDICAL STUDENTS CAN LEARN

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PURPOSE: As globalization continues, medical educators must acknowledge the increasing need to create safe spaces for students to incorporate global citizen competencies. Short international experiences are a way in which students can acquire these features. The aim of this study was to generate an international experience in which students could develop their health innovation and cultural competency. Israel was selected as the trip destination due to its multicultural characteristics, innovation centers, and being in a conflict zone.

METHODS: Twenty pre-clinical medical students from Monterrey and Mexico City between 19–26 years old and four faculty members participated. Activities were directed towards active listening and analyzing the Israeli and Palestine narratives within the conflict, and inspiring students with the healthcare innovation strategies implemented in this region. We sought to enrich the students’ competencies in a
RESULTS: Four domains were explored in the survey, with an 85% response rate. The first domain involved multiculturalism where 96% considered they developed skills that enhanced their cultural competency. Regarding health innovation, 94.7–96.8% acquired a better vision about solutions to health problems. Regarding peacekeeping, 92–95% increased their appreciation for peaceful solutions to conflicts and 86% learned new ways to distribute humanitarian aid. For conflict resolution, 90–93% of students consider that traveling to a conflict area positively changed their perception of the conflict and that exploring cultural contexts, helped them understand the situation and come up with solutions.

CONCLUSION: Giving students the opportunity to participate in a short trip to a conflict zone, provided them with intercultural skills and a broader perspective regarding innovative problem-solving strategies in healthcare systems and conflict resolution.

GENDER INFLUENCE ON REPRESENTATION IN MEDICAL STUDENT PERFORMANCE EVALUATIONS FOR RESIDENCY APPLICATIONS

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PURPOSE: Medical student performance evaluations (MSPEs) for residency application rely on self-reflection and clinical evaluations. Literature shows female medical students are described with behavioral traits (versus male students by competency-based adjectives). We aimed to investigate how gender influences representation on MSPEs by (1) analyzing “noteworthy characteristics” (NCs) self-reported by medical students and (2) assesses gender disparities in clerkship evaluations.

METHODS: MSPE profiles were analyzed for medical students graduating in 2020 and 2021. Self-reported NCs were analyzed (male versus female students, Chi-squared analysis). We also analyzed the specialty-specific evaluations of medical students (5-point Likert scales, eleven clinical competencies) using a two-sample t-test assuming unequal variance to compare means between males and females.

RESULTS: Females were significantly more likely than males to self-report education and teaching as NCs (p = 0.0041) and to report service as their primary NC (p = 0.037). A trend exists for males to report leadership first (p = 0.073). Across all specialties, male students scored significantly higher on clinical evaluations for “formulating a therapeutic plan” (p = 0.0001) and “interpreting diagnostic testing” (p = 0.011). Despite specialty-specific differences in which competency shows a gender disparity, male students always out-perform female students.

CONCLUSIONS: There is a gender disparity in medical student representation in the MSPE for residency applications. Female medical students self-report a more diverse set of character strengths, and trend towards valuing service first over leadership. Even still, females score significantly lower on clinical evaluations than their male counterparts, particularly in analytical clinical skills. This information is important for medical students (and their advisors) as they apply for residency. It also suggests medical educator faculty may consider potential gender bias in their clinical grading.

QUALITATIVE EXPLORATION OF SOCIAL FACTORS THAT UNDERLY MOTIVATIONS OF MEDICAL STUDENTS TO ASPIRE TO THE PROFESSION (IN MEXICO)

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Tecnologico de Monterrey

PURPOSE: Deepen the understanding of the factors and motivations that lead students to aspire to the medical profession.

METHODS: Semistructured interviews were applied to 55 medical students from 3 different Universities in Mexico across all the spectrum of the program (Ages 18–24). Transcribed interviews were submitted to iterative rounds of coding for thematic analysis using grounded theory.

RESULTS: Predominant themes regarding their reasons to enter the profession were I) Interest in the medical science, II) Aspiring to honorability and status, III) Having a physician family member. IV) Having a personal experience with illness. V) Altruistic arguments that understand the profession as a means of helping people. Beyond discourse, one striking finding was that most of them chose their career lacking conscious reasoning and autonomy either because A) ideation/decision was conceived during childhood, B) lacked clear motivation arguments and C) had significant external influence (particularly from parents) on their choice. Such findings helped develop a model that recognizes factors that underly the conscious motivations that students exhibit including: 1) Parental desire or pressure. 2) Proximity of family medical models and lack of exposure to other disciplines. 3) Idealization of the doctor figure during childhood. 4) Influence of television programs. 5) The notion that the career ensures future economic stability/prosperity. 6) Aspiration of social mobility.

CONCLUSION: The prior socialization of students conditions an aspiration based on a perception of heightened professional status that may differ from the current context based on recent social changes. The motivations of the
students have an extrinsic preponderance and do not reflect autonomy and adequate understanding of the implications of studying medicine and the future practice of the profession. This can generate problems about their own satisfaction and identity and with respect to the social impact in the exercise of their future role.

LEADERSHIP LESSONS FOR MEDICAL STUDENTS: CRISIS MANAGEMENT DURING THE COVID-19 PANDEMIC

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PURPOSE: The COVID-19 pandemic has emerged as an unprecedented global health crisis that has challenged leaders to create adaptive solutions in the setting of extreme volatility and uncertainty. This study sought to leverage the experience of healthcare leadership during the COVID-19 crisis to identify key leadership lessons and tangible competencies to equip medical students to better navigate future crises.

METHODS: To understand the leadership challenges posed by the early surge of COVID-19 and the solutions that emerged, 5 medical students conducted 17 semi-structured virtual interviews of leaders across a large, integrated healthcare system in the New York region during August 2020. After transcribing the interviews, content analysis was conducted to identify themes regarding challenges encountered by leaders. A modified nominal group technique was used to identify lessons applicable to medical students.

RESULTS: Three key leadership challenges and corresponding solutions emerged from our analysis: 1. To overcome uncertainty and ambiguity, it was essential to establish shared goals, ensure leadership visibility, and create a culture of support that empowered personnel. 2. To address a rapidly changing environment, effective adaptation of preexisting infrastructure hinged on established teamwork, frequent communication, and the humility to reevaluate. 3. The scale of the crisis warranted innovative solutions, underscoring the need for interdisciplinary, interinstitutional collaboration. Students would benefit from observing and practicing leadership skills throughout their training to ensure their capacity to respond to a crisis.

CONCLUSION: While COVID-19 placed extraordinary demands on the healthcare system, it revealed that adaptability, teamwork, trust, and communication continue to be core leadership principles that students should aim to develop. Especially as healthcare becomes increasingly complex, it is paramount for students to learn from and collaborate with other disciplines, both in and outside of medicine. Students should actively seek out additional opportunities to practice leadership skills and observe other leaders to better prepare for future crises.

DEVELOPMENT OF DIVERSITY COMPETENCE IN HEALTH PROFESSIONALS

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Tecnologico de Monterrey

PURPOSE: In today’s society due to migratory displacements, different ethnic groups and the great existing cultural diversity, it is necessary for health professionals to attend the main demands and needs of the population, because of their different characteristics regarding their culture, sex, religion, language, education, sexual orientation. The aim of this work is to identify the development of diversity competence from the Confirmation of Expectations Theory.

METHODS: The methodology was quantitative, descriptive and transectional. A questionnaire validated by focus groups and Cronbach’s Alpha (0.97) was used as a pre-test and post-test to measure the value perceived by the students. It was applied to the total number of students enrolled in the Tec Week activities. The questionnaire was answered by 21 students in the activities Me, you, others, us and Diversity in a globalized world. For statistical analysis, the Wilcoxon test was used.

RESULTS: From the Tec Week activities, the results of the Me, you, others, us and Diversity in a globalized world activity show that students identify human rights, the value of diversity, discrimination, inequality and human dignity in their environment close, which allows providing patient-centered care, ensuring that the care received is according to their needs and preferences.

CONCLUSION: The development of diversity competence contributes to the training of health professionals based on human rights and the individuality and characteristics of the patient, expressing openness, interest and disposition towards the diversity that surrounds them.

FROM TEACHER TO MENTOR: AN INNOVATIVE FACULTY DEVELOPMENT PROGRAM

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Tecnologico de Monterrey

PURPOSE: The purpose of the Medicine Residents’ Mentoring Program in a Multicentric Program with 290 residents
and 17 medical specialty programs is to implement a quality initiative to improve residents’ educational outcomes and support them to improve personal wellbeing and planning their future career. A specific Faculty Development Program for Mentors (FDPM) was designed and implemented.

METHODS: Medical Professors of 17 Residency Programs were invited to become mentors and required to accredited a specific Faculty Development Program for Mentors (FDPM). FDPM is divided in three modules: (1) mentoring in a wellness program, (2) strategies and tools for mental health and suicide prevention, and (3) mentoring and support services for case reference. First module was an introduction to the Residents’ Mentoring Program, objectives, role as a mentor and interviewing techniques. Second module consisted of the suicide prevention QPR (Question, Persuade & Refer) Gatekeeper training. Third module, was designed as a case simulation training as a workshop focusing on mentoring interviewing techniques and identification of cases that need to be referred to support services.

RESULTS: From August 2018 to February 2020, 122 Medical Professors of 16 Residency Programs accredited the specific Faculty Development Program for Mentors (FDPM).

CONCLUSIONS: After completing their training, the mentors have one-on-one meetings with residents in which they talk about current concerns. After identifying any problems or concerns in each of the mentoring categories (academic, personal & future career), they would come up with a work plan and schedule a follow up meeting within three months. If the situation warrants it, the mentor will have the ability to refer the resident to the corresponding support department.

HEALTH SCIENCES STUDENTS’ PERCEPTION ABOUT THE DEVELOPMENT OF THE FIRST AID COMPETENCE IN DISTANCE LEARNING

Johanna Valencia | Cesar Lucio | Maria Jiménez | Claudia Treviño | Silvia Olivares

Tecnologico de Monterrey

PURPOSE: First aid is the immediate attention given to victims in emergency situations or when an accident occurs, which is why it is absolutely necessary for all medicine and health sciences institutes to include in their syllabus a plan for students to develop first aid competences.

METHODS: Qualitative descriptive method. A questionnaire validated by focus groups was used as a pre-test and post-test to know student’s predisposition regarding the first aid competence that was held in distance learning in Semana Tec. The questionnaire’s criteria were a) Act in an emergency situation, b) CPR, c) TRIAGE and d) Psychological first aid. A total of 301 students answered the questionnaire.

RESULTS: Pre-test results indicated that students’ expectations were to learn about first aid basics and how to act in an emergency situation. Post-test results showed that what students learned the most was how to act in an emergency situation, first aid basics and the correct CPR technique. They mentioned that they did not know that TRIAGE and psychological first aid were part of the immediate attention given in an emergency situation: S1. “Learning about psychological first aid made my week so much better because I really value mental health. Health is the set of physical, social and mental well-being”. Regarding the course being held in distance learning because of SARS-CoV-2, they said: S2. “I learned how to give CPR maneuvers in distance. I had great classes and I learned how to do it with something as simple as a plastic bottle”.

CONCLUSION: Learning about first aid contributes to student’s academic formation and it ensures they can act in emergency situations wherever they may be. They also become advocates for accident prevention and promoters of a healthy lifestyle.

Student Support

IMPOSTORISM IN MEDICAL STUDENTS DURING EARLY CLINICAL TRAINING IS NOT MITIGATED BY GREATER REAL AND PERCEIVED PREPAREDNESS

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PURPOSE: The implementation of a major curricular revision was used as a naturalistic experiment to examine the effects of variation in perceived and actual preparedness for clinical clerkships on impostorism, stress, and burnout in medical students as they transitioned from the preclinical to clinical phases of training.

METHODS: A cross-sectional study was conducted in third-year medical students in the last year of the “Legacy” curriculum and the first year of the revised “ACE” curriculum. Respondents completed a voluntary, anonymous, 60-item survey that included the Clance Impostor Phenomenon Scale and the Perceived Stress Scale in October–November of 2018 and 2019, respectively. USMLE Step 1 scores and routinely collected data on students’ self-perception and faculty assessment of students’ preparedness for clinics were also examined. Data were analyzed using the Student-t, Chi-square, Mann–Whitney, and two-proportion z tests.
RESULTS: Compared to Legacy students, ACE students had higher USMLE Step 1 scores (p < 0.0001, d = 0.54, N = 224) and were perceived as being better prepared for clinical clerkships by themselves (p < 0.001, d = 0.51, N = 158) and by faculty (p < 0.0001, h = 1.72, N = 157). The perceived stress score for Legacy students was 17.9 ± 6.9. Perceived stress was 15% lower in ACE students (p < 0.05, d = 0.34, N = 222). Impostor scores were 63.1 ± 15 and 63.4 ± 14 for Legacy and ACE students, respectively (p = 0.88, d = 0.02, N = 224). The proportion of students meeting criterion for impostor phenomenon was not different between groups (p = 0.18, h = 0.20, N = 224).

CONCLUSIONS: ACE students had better external indicators of preparedness for clinics and perceived themselves to be better prepared than Legacy students. Despite this greater competence and confidence, impostor scores were nearly identical between these groups. This suggests that impostorism in medical students during the transition to clinical training is not mitigated by greater real and perceived preparedness. Supported by the University of Kansas Academy of Medical Educators and NIH CTSA Award UL1TR002366.

SHARED LIVING EXPERIENCES THROUGH SYNCHRONOUS VIDEOCONFERENCE HAVE A POSITIVE IMPACT ON ATTITUDES TO MENTAL HEALTH AMONG PHYSICIAN ASSISTANT STUDENTS: A MIXED METHODS STUDY

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PURPOSE: Mental illness is common among health care professions students, a group at higher risk for suicide completion than their age-normed peers. We are interested in exploring whether a tripartite intervention that includes senior PA clinicians sharing their lived experience with mental illness can have an impact on PA students’ attitudes to mental health and help-seeking behaviors.

METHODS: Didactic PA students from five programs completed two surveys 4 weeks apart. Between the surveys, a one-hour videoconferencing discussion was offered with two PA faculty who shared a personal history of mental illness. Disclosures were immediately followed by small-group facilitated discussions. The control included students from all five programs who completed baseline and endpoint surveys but did not participate in the intervention. We conducted two-way ANOVA (p < 0.05) and report results in the aggregate by time point. Intervention-students optionally participated in a focus group after the endpoint survey; transcripts of these small group narratives were used for the qualitative analysis.

RESULTS: PA students across five programs (n = 167) participated in a baseline survey. The intervention group (n = 37) had less stigmatized views on the Opening Minds to Stigma (OMS-HC, p = 0.002) and the Self-Stigma of Seeking Help (SSOSH, p = 0.006) scales. The change in the OMS-HC was driven by the disclosure/help-seeking (p = 0.02) and social distance (p = 0.003) subscales. The control group (n = 75) had no commensurate changes. Thematic analysis of focus group transcripts revealed key themes of the active elements of self-disclosure, mutuality, and peer relationships.

CONCLUSIONS: A one-hour self-disclosure, peer discussion was effective in reducing stigma surrounding mental illness and improving the self-stigma of help-seeking behaviors. Open sharing of experiences and modeling allowed faculty to challenge the hidden curriculum of shame and secrecy that permeates healthcare.

CREATING ENGAGEMENT TO IMPROVE INCLUSION OF UNDER-REPRESENTED IN MEDICINE (URIM) STUDENTS THROUGH THE HUMAN-CENTERED DESIGN (HCD) PROCESS

Julia Schmitt | Malika Siker, MD | Stuart Riepl | Lindsay Howard | Na’il Scoggins | M. Chris Decker, MD

Medical College of Wisconsin

PURPOSE: The proportion URIM individuals at the Medical College of Wisconsin (MCW) in graduate medical education (GME) programs and faculty positions was consistently less than those in undergraduate medical education (UME) programs, with many URIM students choosing GME positions outside of MCW. The Diversity Engagement Survey (DES) showed that Black and Latinx students had negative experiences in feeling supported or included, among other data points. Our team aimed to gather qualitative data through personal stories to better understand the experiences of URIM students at MCW to inform possible interventions.

METHODS: 20% of URIM students at MCW participated in a Human-Centered Design Sprint (HCDS) using storytelling as an empathy process to define 32 problem statements about their experience in medical school. The problem statements were categorized and shared at a campus-wide town hall presentation along with the other survey data.

RESULTS: Over 100 town hall participants learned findings from the HCDS, DES, and an MCW student survey. Three emergent themes arose from the stories that aligned with the survey data describing a lack of: 1) support (75%); 2) connection (75%); and 3) respect (50%). As a result, the Kern Institute promoted URIM Student Inclusion as its theme for the 2020–21 HCD innovator seed grant program. Fourteen
The abrupt alterations to teaching and learning caused by COVID-19. We conclude by reflecting on what medical science educators can learn from these unprompted discourses about professionalism, the basic and clinical sciences, and what it might take for developing physicians to be-and feel-prepared.

METHODS: In this qualitative discourse analysis, 5,460 r/medicalschool Reddit posts were examined from March 12 to April 16 2020, when US universities announced shifts to virtual learning and alternative formats for clinical rotations and clerkships. Threads with titles including “COVID” “COVID-19,” “corona,” or “coronavirus” with at least 50 upvotes during the previous week were collected. Data analysis identified patterns and underlying themes surrounding student professionalism and medical school curricula.

RESULTS: Numerous students throughout the posts expressed inability or unpreparedness to be clinically useful during the pandemic response, referring to themselves as “fomites,” “useless,” “nonessential,” “just a resident,” and “a waste of a mask” as many resigned themselves to studying and accruing exam-driven knowledge. This indicated an enculturated belief of clinical incapacity and a strong practical, curricular, and mental separation between the process of completing medical school and that of becoming a professional clinician.

CONCLUSIONS: COVID-19 reminded us that preparing the next generation of medical professionals for the challenges of an unknown future might ask both us and our students to change. Medical science educators must deconstruct and reimagine the work of medical education and support learners through the hard work of transitioning from the familiar—the practiced identities and rote strategies that allowed them to achieve as students—to the foundational, the incremental, and the necessary knowledge that will anchor them as burgeoning professionals.

MEDICAL STUDENT RESPONSES TO COVID-19 AND NEW DIRECTIONS FOR MEDICAL EDUCATION: A DISCOURSE ANALYSIS

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PURPOSE: This qualitative study analyzed online peer-to-peer messages in which students expressed and debated aspects of their beliefs, perceptions, goals, challenges, and supports surrounding their medical education in light of the abrupt alterations to teaching and learning caused by COVID-19. We conclude by reflecting on what medical science educators can learn from these unprompted discourses about professionalism, the basic and clinical sciences, and what it might take for developing physicians to be-and feel-prepared.

METHODS: In this qualitative discourse analysis, 5,460 r/medicalschool Reddit posts were examined from March 12 to April 16 2020, when US universities announced shifts to virtual learning and alternative formats for clinical rotations and clerkships. Threads with titles including “COVID” “COVID-19,” “corona,” or “coronavirus” with at least 50 upvotes during the previous week were collected. Data analysis identified patterns and underlying themes surrounding student professionalism and medical school curricula.

RESULTS: Numerous students throughout the posts expressed inability or unpreparedness to be clinically useful during the pandemic response, referring to themselves as “fomites,” “useless,” “nonessential,” “just a resident,” and “a waste of a mask” as many resigned themselves to studying and accruing exam-driven knowledge. This indicated an enculturated belief of clinical incapacity and a strong practical, curricular, and mental separation between the process of completing medical school and that of becoming a professional clinician.

CONCLUSIONS: COVID-19 reminded us that preparing the next generation of medical professionals for the challenges of an unknown future might ask both us and our students to change. Medical science educators must deconstruct and reimagine the work of medical education and support learners through the hard work of transitioning from the familiar—the practiced identities and rote strategies that allowed them to achieve as students—to the foundational, the incremental, and the necessary knowledge that will anchor them as burgeoning professionals.

MEDICAL STUDENTS’ EXPERIENCES OF THE IMPOSTOR PHENOMENON

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PURPOSE: The term ‘impostor phenomenon’, used to “designate an internal experience of intellectual phonies”, was first coined by Clance and Imes in 1978. Those who experience this have profound thoughts of fraudulence regarding their professional or intellectual activities. This perception of illegitimacy causes sufferers to credit their success to error, blocking high achievers from acknowledging their successes and hindering development in self-esteem.

METHODS: This research aimed to uncover and explore the relationship between medical students and the impostor phenomenon. An ethics-approved action research project was completed at The University of Sheffield, using a pragmatic approach which integrated quantitative and qualitative data from a questionnaire, focus groups and interviews. The main quantitative measure was the Clance Impostor Phenomenon Scale (CIPS), which produces scores between 20–100.

RESULTS: There were 191 questionnaire responses, and 19 students joined a focus group or interview. With a mean CIPS score of 65.81 ± 13.72, the average student had “frequent” impostor experiences. “Clinically significant” CIPS scores were recorded in 65.4% of students, and on average females scored 9.15 points more than males (p < 0.0001). The highest scoring CIPS item, with 48.7% of students responding “very true”, was "I often compare my ability to those around me and think they may be more intelligent than I am”, and “sometimes I’m afraid others will discover how much knowledge or ability I really lack” was the strongest predictor of total CIPS score (r = 0.78, p < 0.0001). ‘Fear of failure’, ‘self-criticism’, ‘perfectionism’ and other associated experiences were also concomitant with total score (r = 0.49, p < 0.0001). Students’ quotes underscore this data and offer an authentic insight into their experiences.

CONCLUSIONS: The output from this original research includes four recommendations for practice, which medical schools should consider implementing in order to alleviate students’ experiences of the impostor phenomenon. They aim
to provide opportunities for pedagogical advancement and improvement within the medical educational environment.

**MANAGING YOUR MIND THROUGH MEDICAL SCHOOL: PRACTICAL SKILLS TO THRIVE**

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**PURPOSE:** Medical student wellness is a growing area of national concern. As a response to both national data and our own student wellness survey, a pilot training program was developed and implemented for preclinical medical students. Since resiliency can be learned, the aim of the program was to provide practical tools to manage stress and assist coping throughout student medical training. Rather than singling out struggling students, this program was offered as a positive approach to build resiliency.

**METHODS:** The program included four sessions; two per semester. All sessions involved approaches that help calm the sympathetic nervous system in order to boost learning and performance. Session 1 focused on the power of connection, safety and social engagement. Session 2 provided cognitive strategies of reappraisal and distraction to manage anxious thoughts and to avoid the “amygdala hijack.” Session 3 taught mind–body experiential techniques such as deep breathing, guided imagery, progressive muscle relaxation, etc. used to calm the physical body. Session 4 focused on resiliency for the long haul and included strategies related to gratitude, internal locus of control, hope and optimism.

**RESULTS:** Pre and post student surveys were used to assess importance, basic knowledge of the topic, confidence, effectiveness and quality of the presentations. Feedback thus far has been overwhelmingly positive. Data will be analyzed and presented once the pilot program is complete in Spring. Feedback from students will also be included as well as suggested improvements for next year.

**CONCLUSION:** Based on student feedback and survey data thus far, students report this wellness series as a needed step in their development of resiliency. They requested the skills be taught early in the academic year, adding role-play and more practice of skills taught related to boosting confidence in application of resiliency tools.

**PERFECTIONISM AS A MEDIATOR OF PSYCHOLOGICAL DISTRESS: IMPLICATIONS FOR ADDRESSING UNDERLYING VULNERABILITIES TO THE MENTAL HEALTH OF MEDICAL STUDENTS**

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The University of Queensland

**PURPOSE:** Medical students have personalities that are often shown to be perfectionistic. Perfectionism can manifest as maladaptive and lead to psychological distress. Medical students often self-identify as perfectionists, but may not recognize the negative feelings it may create such as comparison to others and self-criticism that can lead to anxiety, stress and depression. This study examined the mediating role of perfectionism on the association between personality trait profiles and levels of psychological distress.

**METHODS:** First-year medical students completed a questionnaire containing measures of personality, perfectionism (Concern over Mistakes: CoM), stress, anxiety and depression. Latent profile analysis classified students based on their personality traits and identified a profile vulnerable to psychological distress. Structural equation models examined the mediation effects of perfectionism on the relationship between the vulnerable personality profile and distress.

**RESULTS:** The sample totalled 376 (84% response). The vulnerable personality profile was highest in Harm Avoidance, lowest in Self-Directedness, and significantly correlated with highest Perfectionism-CoM. High Perfectionism-CoM was associated with the highest levels of stress, anxiety and depression. Perfectionism-CoM was a significant mediator for the relationship between personality and higher levels of psychological distress.

**CONCLUSION:** Certain personality profiles are predisposed to psychological distress such as anxiety, stress and depression. Perfectionism, as a mediator between personality and psychological distress, may be a target strategy to help increase students’ self-acceptance, and self-awareness of their perfectionistic tendencies. Incorporating self-awareness early in the curriculum may increase students’ self-acceptance and lower their vulnerability to poor mental health.

**UNDERSTANDING THE WELL-BEING OF DENTISTRY STUDENTS**

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**PURPOSE:** The transactional model of stress is a framework describing the process for coping with stressful events as a relationship between the individual person and environment. This study aimed to investigate the associations between personality, learning environment, and indicators of mental health for a cohort of Australian dentistry students over time.

**METHODS:** In 2017, students were invited to complete an online questionnaire including the Depression, Anxiety
and Stress Scale (DASS-21), The Dundee Ready Education Environment Measure (DREEM) and the Temperament and Character Inventory (TCIR-140). Data were collected at two time points over two years. A two-step cluster analyses identified homogenous groups. Generalised estimating equations (GEE) were used.

**RESULTS:** Students (N=219; response 73.5%) participated at both time points. Two personality profiles were identified. Group 1 were significantly higher in persistence, self-directedness, cooperativeness and reward dependence, whereas Group 2 were significantly higher in harm avoidance. Group 2 had a 3.12 (CI:1.72–5.65) increased odds of depression compared to Group 1 students. Compared to students with positive perceptions of the learning environment, students with negative perceptions had increased odds of stress (3.48, CI:1.85–6.53), depression (2.71, CI:1.57–4.65) and anxiety (2.59, CI:1.56–4.28).

**CONCLUSION:** Students’ personality and perceptions of their educational environment can be predictors of wellbeing. Understanding the relationship between profiles of personality traits and students’ perceptions of the learning environment warrants further investigation into interventions aiming to enhance student well-being. It may also provide direction for interventions that target support for faculty development to help ensure the educational environment is nurturing for students and staff.

### UNDERSTANDING GENDERED DIFFERENCES IN MENTAL HEALTH OUTCOMES AMONG PHYSICIANS

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UNC Chapel Hill

**PURPOSE:** This project investigates gendered differences in mental wellbeing among residents in emergency medicine (EM) and internal medicine (IM). Physicians in these fields are consistently among the most burnt out and unhappy in medicine. Profession-wide, women are 2.27 times more likely to complete suicide than their non-physician female peers. Burnout in women physicians may also be as much as 20–60% higher than among men. It remains unclear, however, whether men and women trainees experience mental wellbeing in the same ways. How are women trainees’ experiences different than men’s and how is their wellbeing differently affected?

**METHODS:** The first author conducted semi-structured interviews with 30 residents from three Midwestern IM and EM programs. Respondents also completed the Maslach Burnout Inventory. Interviews were then analyzed by both authors using open and focused coding.

**RESULTS:** 80% of respondents exhibited at least one symptom of burnout. Women had higher emotional exhaustion scores than men (28 vs. 26.7), while men had higher depersonalization scores (12.6 vs. 8.8), suggesting that men and women in the sample experienced burnout differently. Qualitative results point to highly masculinized ideal worker norms including “heroism,” “stoicism” and “strength,” which was reflected in respondents’ emphasis on “pushing through” emotionally difficult scenarios. Masculinized ideal worker norms often demand depersonalization from physicians, and may be especially harmful to women’s emotional exhaustion, partly because women more often reported scrutiny when they displayed emotion at work. Women also disproportionately experienced discrimination and harassment due to their gender, which further affected their wellbeing. They bore the additional emotional burden of having to regularly (re)establish their legitimacy as professionals vis-à-vis patients and clinicians, making them feel drained and frustrated.

**CONCLUSION:** These results point to profession-wide factors that may affect male and female residents’ wellbeing differently. Interventions targeting gender inequality could thus improve equity and wellbeing in the profession.

### A PREDICTION MODEL USING REGRESSION ANALYSIS FACILITATES TARGETED ACADEMIC COACHING

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**PURPOSE:** Academic performance during the clerkship year provides strong indications on how students might perform on United States Medical License Examination Step 2 Clinical Knowledge. A data-driven frame of reference for expected shelf performance assists in proactively identifying and referring clerkship students for academic coaching. **METHODS:** Regression analysis (RA) was conducted using a multiple linear regression model with backward elimination. The regression equations generated were used to calculate a roster of predicted scores for eight clinical science subject (shelf) examinations. The student score profiles created are monitored, as students proceed through the clerkship year. NBME documented tenth percentile and clerkship director selected cutoff scores are used as benchmarks. Students scoring two SEM’s (~8 points) or more below predicted, categorized as “storm warnings”, are also referred for academic coaching. The coaching process typically focused on time management and how to use question banks effectively and intentionally to Self-Assess, Identify and Patch knowledge gaps (SIP).
RESULTS: Currently, 143 students are transitioning through the clerkship year. Interim profile follow-ups indicated 5/14 students (35.7%) with at least one fail and 16/24 (66.7%) students with at least one tenth percentile, are now performing as predicted. 3/10 students (30%) with both fail and tenth percentile flags have very recently started to perform as predicted. 17/19 “storm warning” students (89.5%) demonstrated an immediate return to predicted performance.

CONCLUSION: RA generated profiles are beneficial for identifying academically vulnerable students, as well as students who hit an academic speed bump, during the clerkship year. Approaching each student with learner-centered questions, to know more about their work/study balance, allowed the coaches-coachee partnership to customize study strategies that would more likely be integrated by the student. Educating students on how to use the SIP process may facilitate the development of life-long learning skills during and beyond the clerkship year.

RESIDENTS’ WELLBEING PROGRAM: SELF-CARE AND WELLBEING AS A PROFESSIONAL COMPETENCE IN THE COVID-19 PANDEMIC

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PURPOSE: International studies have reported that during clinical training periods, indicators of quality in patient care and safety, as well as those of the personal well-being of resident doctors, may suffer a detriment if a highly demanding or hostile teaching environment is present during this time of learning. The objective of the Professionalism and Wellbeing Program for Medical Residents implemented by a university in northern Mexico is to integrate strategies for professional development and wellbeing, as well as to contribute to strengthening clinical training environments, with the intention of improving personal wellbeing, patient care and safety.

METHODS: The program was implemented with the 290 medical residents of the 17 specialty programs from March 2019 and, additionally, virtual strategies were implemented for the health contingency of the COVID-19 pandemic from April 2020 to date.

RESULTS: All medical residents in their first year of residency (February 2019 & 2020) participated in the induction sessions of the Professionalism and Wellbeing Program and at least 3 sessions through the semester, in 2019 face-to-face and in 2020 virtually. The chiefs and co-chiefs of residents were trained in a Workshop so they could help other residents in adverse situations. Among the virtual strategies, we implemented virtual counseling and Balint groups for resident doctors in Zoom, the topics of greatest interest for discussion selected by the participants (n=51) in the group sessions were: emotional well-being in health professionals (94.1%) and burnout syndrome (94.1%).

CONCLUSIONS: These initiatives aim to strengthen the training processes of education, professionalism, and humanism, with the residents of our program as an expression of the social responsibility of the profession to contribute to the well-being, and to the patient’s care and safety.

MANAGING TRANSITIONS; USING A TRIPLE A STRATEGY IN EMOTIONAL INTELLIGENCE TO SUPPORT LEARNERS

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PURPOSE: PhD students and postdoctoral fellows in biomedical research face tremendous challenges in navigating not only the research landscape, but also managing conflict in work environments. In addition, managing transitions from fully face-to-face work spaces to a hybrid one due to Covid-19 is socially challenging and demanding, often leading to burnout. Universities need to address relationship building using simple emotional intelligence strategies that are practical and easy to apply even by a novice.

METHODS: In view of changing work place dynamics due to Covid-19, we conducted an interactive online workshop on emotional intelligence. Using Daniel Goleman’s framework, we developed a practical and work-place relevant strategy called the Triple A framework of Acknowledge, Ask and Adapt. In this pilot workshop with over 70 attendees, we built a toolkit that students and postdocs can put into practice by firstly acknowledging their emotions, then asking appropriate questions of themselves and of the other, and ending with adaptability focused on giving and taking control to relative degrees.

RESULTS: The pilot workshop was well received with 95% participants agreeing that the Triple A strategy is a simple to use and practical toolkit that can address conflict in the workplace and that would allow for resolution of issues that are deemed challenging especially by novice researchers. Participants also followed up with questions on best practices using their own personal scenarios. Peer sharing led to a more empowering take away.

CONCLUSIONS: We have learnt that practical strategies in using emotional intelligence is an area that warrants further exploration and development into a program that would benefit PhD students and postdoctoral fellows as they navigate personal and professional challenges in the work place. As the utilization of emotional intelligence strategies is critical for career success, we are taking the next step in developing
this further to provide support to a wider community of learners.

**TBL/PBL**

**PEER-TO-PEER GROUP FACILITATION: A CONSTRUCTIVIST RESOURCE FOR PA EDUCATION**

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PURPOSE: Based on the constructivist theory, Peer-to-Peer supports the academic needs of first-year physician assistant (PA) students while augmenting critical thinking and group collaboration. Partnering with our institution’s Center for Learning & Academic Success Services (CLASS), students actively engage with the material via clinical vignettes requiring knowledge of anatomy, pathophysiology, clinical medicine, and pharmacology.

METHODS: Since 2016, first-year PA students have voluntarily attended (3) 10-week quarters of Peer-to-Peer. To facilitate the sessions, 10 PA students from the same cohort are selected as leaders based on strong academic and interpersonal skills. CLASS also provides 10 non-PA graduate student tutors for structural guidance. In each weekly two-hour session, groups review study strategies, discuss lecture material, and complete faculty-designed cases based on course material. After each meeting, participants assess (1) session utility for understanding material, (2) utilization of study-tips from the session, (3) usefulness of the case vignette, (4) applicability of the case questions, and (5) engagement of the session; they could also provide qualitative comments.

RESULTS: Based on quantitative (1–5 Likert scale) and qualitative feedback, participants note that the program facilitates interactive learning, improves study skills, and increases understanding of course material. Participants also felt that the program augmented their ability to take individual ownership of their learning.

CONCLUSION: With the rigor of didactic PA education and the structure of PA school, one common challenge is meeting students’ academic needs. This program increases academic support for first-year students. Additionally, as a profession, physician assistants are drawn to collaborative work, thus it is our responsibility as faculty to mimic these interdepartmental teamwork opportunities for our students to improve their group development skills prior to clinical practice. This initiative provides a new method to meet the academic needs of first-year PA students and can function virtually.

**SIMULATED ACUTE CARE CLINICS PROVIDE MEDICAL STUDENTS WITH KEY SKILLS FOR EMERGENCY DEPARTMENT PLACEMENTS**

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PURPOSE: Preparing medical students for managing acute patients in Emergency departments (ED) is problematic due to the wide range of skills required: history taking and examination for common acute conditions; integrating medical knowledge with procedural and technical skills; formulating a differential diagnosis; ordering appropriate tests; collaborating with team members. In addition, the students must perform under time pressure of high acuity cases.

METHODS: A simulated acute care ward was developed for teaching Year 4 (Y4) students, at an Australian undergraduate medical school, to diagnose and manage common, acute medical problems. This sequential explanatory mixed-methods study identifies the skills learnt that later benefitted students on a subsequent ED placement.

RESULTS: A mixed-methods approach involving a survey to 161 Y4 students (response rate = 78%) to evaluate the skills taught in JCAC, followed by 4 focus groups (n = 26) to identify how these skills assisted students during later real-world ED placements. Y4 students rated the intervention as 9/10 or higher across 13/15 acute care management processes taught in the simulation. Students participating in two sessions, as opposed to one, had higher confidences regarding: “ability to be an independent Y4 junior doctor on a hospital ward” (p = 0.006); “ability to do well on a rural placement” (p = 0.007); and, “appropriate clinical reasoning ability for Y4” (p = 0.005). Focus groups found students reported greater participation in their ED placement from understanding the system, improved confidence in managing patients, summarising, and discussing cases and counselling patients.

CONCLUSIONS: Thus, this simulation provided learning experiences that significantly increased the confidence and skills of students in real-world Emergency Medicine situations by integrating clinical knowledge with acute care patient management and clinical decision-making. In addition, having real-world ED placements following on from JCAC sessions allowed reinforcement and further development of acute care competencies making them more ‘work ready’ to practise Emergency Medicine.

**TBL IN THE AGE OF COVID-19 -USING TURNING POINT® AS A TOOL TO ADMINISTER A MODIFIED ONLINE TBL**
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PURPOSE: The COVID-19 pandemic has upended Medical Education. Moving lectures online was relatively easy, but how would one move Team-Based-Learning (TBL) exercises? A number of solutions were implemented since, including commercial software. We set out to use the currently available resources to devise a modified TBL format, using an audience response system (TurningPoint Technologies), Zoom, and the school’s Learning-management system (Canvas). This abstract describes the adaptation of the TBL concept to a modified online version, and a summary of initial student feedback.

METHODS: We devised our TBL for an online synchronous modality. The IRAT, GRAT and GAE were imported into an online polling software. Students were sent the hyperlink, using the Zoom chat function. Progress on the students’ submissions was monitored online in real-time. For the GRAT and GAE, students were divided into pre-defined breakout rooms to work within their steady TBL teams.

RESULTS: Our first online TBL took place in April. Considering the stress the students experienced due to the pandemic, we decided to omit the IRAT during the in-class session and concentrated on the group exercises. Interestingly, this format was more favorably received than the following online TBLs utilizing the three-part—classic’ structure. The ratings for the respective TBLs did not change significantly from previous years. Content analysis of the qualitative data revealed similar themes as well, independent of the online format. Students clearly appreciated the opportunity to work in their designated groups.

CONCLUSIONS: Results from this study support the hypothesis that an online TBL format is possible, even by using generic software tools that are available at most institutions. The format presented in this study demonstrates that faculty and students can be in a multitude of locations and still conduct a successful and effective Team-based Learning class session via streaming software, such as Zoom.

Technology and Innovation

THE USE OF SIMULATION TO OVERCOME EDUCATIONAL CHALLENGES IN THE COVID-19 PANDEMIC

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PURPOSE: The outbreak of COVID-19 has presented unique challenges to hands-on learning. After a decision to suspend in-person instruction, Physician Assistant (PA) faculty at Wingate University were tasked with developing a virtual curriculum for PA 552, Medical Procedures. This course is normally taught in person with hands-on instruction of skills like suturing and knot tying. This poster require students to collaborate and problem solve in teams. Graded peer and team assessments, using validated instruments, can ensure that all team members are held accountable. Peer and team assessments can also help to reduce social loafing and can improve students’ efficacy as team members. Peer and team assessments have also been shown to improve students’ overall course grade. But could peer and team assessments also provide a way to develop important interpersonal and team skills, like giving and receiving feedback, empathy, and emotional regulation, so crucial for success in healthcare today?

METHODS: Our relatively new Physician Assistant program in a New England graduate health professions school adopted a team-based learning pedagogy for its program. TBL requires a peer and team-assessment component. Our program began using only an anonymous assessment tool and evolved over time, using student feedback, into a more organic process of skill-building workshops, anonymous peer and team feedback using a validated instrument, face-to-face facilitated peer feedback sessions based on the results of the anonymous instrument, and graded self-reflection papers.

RESULTS: Student satisfaction surveys indicate that facilitated peer feedback sessions were consistently highly rated, while graded reflections needed greater focus and perceived connection to learning outcomes.

CONCLUSIONS: Initial data suggests that our current model of peer and team assessments contributes to the development of interpersonal and team building skills in future healthcare providers. Further longitudinal research is needed to examine the long-term effect, especially once students have moved into fulltime practice.
describes the course development and the student responses to learning through simulation.

METHODS: PA 552 is a 2-credit-hour course spanning 11 classes. Prior to the semester start, students were sent home with tool kits that included materials to complete weekly assignments. Each week, students were tasked with watching a recorded lecture and reviewing preparatory material before uploading a video of themselves completing a procedural task. Feedback was given through Canvas rubrics. Three live zoom sessions were also held throughout the semester to answer questions. At the end of the course, students were asked to voluntarily complete a modified version of the Satisfaction with Simulation Experience Survey (SSES).

RESULTS: All 54 students passed the course, allowing them to enter clinical rotations having learned the procedural skills normally taught. 35 students (65%) completed a modified version of the SSES. Results revealed that overall, students felt the simulated course work improved their learning.

CONCLUSION: The small size and low response rate make conclusions about the wholesale replacement of hands-on instruction with simulation difficult to make. The course does represent a unique approach to the challenges of COVID-19, and it exemplifies faculty resourcefulness. Finally, it bolsters the evidence that simulation can and does have a positive impact on student learning.

INTERNATIONALIZATION OF MEDICAL EDUCATION AT HOME-IMPROVING CULTURAL COMPETENCY SKILLS VIA INTERNATIONAL PEER CONTACT ONLINE

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PURPOSE: Student outbound mobility programs have become increasingly popular. Despite different definitions of cultural competency in healthcare, learning objectives for international student exchanges often include the improvement of cultural competency skills. Reports on local programs that aim at acquiring cultural competencies without associated travel are quite limited to date. Internationalization at home is a newer concept that aims to provide students with international experiences without traveling - it can reach all students and provide them with skills in cultural competency for future international collaboration and to practice medicine with a global mindset.

METHODS: During the COVID-19 pandemic, an online program was initiated as a replacement for student exchange travel, to provide students with learning competencies equivalent to what is expected to be acquired during international internships. Among other learning objectives, the program’s educational goals included acquisition of cultural awareness and competency - similar to what the students would have obtained if they had travelled abroad. 68 students from 12 international universities participated in a condensed 8-week online program involving international small peer group collaborative work, online networking, and scientific educational enrichment. Perceived improvement of cultural competency using Likert Scale and open-ended questions was used as a measure of success. Furthermore, students’ definition of cultural competency and incompetency in the different countries was captured.

RESULTS: The program was well received by students, and improved their perceived cultural competency skills. Data analysis supported statistically significant improvement of the above skills after the program, in comparison to the start of the program. Thus, learning objectives were achieved.

CONCLUSIONS: We conclude that internationalization at home via online programming and peer contact online can be a safe and socially equitable alternative for student outbound mobility, to improve cultural competency, while increasing opportunities to obtain an international education for more students and institutions.

OSCE.AI: A NOVEL MEDICAL EDUCATION SMARTPHONE APPLICATION OFFERING SIMULATED MEDICAL STUDENT HISTORY-TAKING

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PURPOSE: With the increasing ubiquity of technology and smartphones, OSCE.AI is a novel smartphone application (app) offering conversation-based simulation training for medical students to practice their history-taking, specifically in relation to their Objective Structured Clinical Examinations (OSCEs). Particularly during the COVID-19 pandemic, the app allows students to practice history-taking remotely and receive objective feedback. This study presents the results of a user survey following the app’s pilot release.

METHODS: OSCE.AI comprises artificial intelligence chatbots that interact with and respond to students similarly to real patients. Students can choose between 8 presenting complaints and within each presenting complaint, 1 to 3 patients of varying demographics. Upon completing each history, students are presented with tailored mark schemes providing feedback and a summary of each condition and its management. A survey was distributed to the mailing list of
present OSCE.AI users in January 2020, with 3 quantitative questions pertaining to the chatbots, feedback and case summaries, as well as 2 qualitative open-ended questions asking for positive and negative feedback.

RESULTS: 19 responses were received, of which most respondents were in 3rd and 4th year (36.8% each). Mean ratings of the chatbots, mark schemes and case summaries out of 5 were 3.79, 3.89 and 3.79 respectively. Positive feedback mainly cited the app’s interactive nature (n = 5) and easy-to-use interface (n = 7). Conversely, however, users described inconsistencies in triggering marks (n = 9) and limited cases (n = 2).

CONCLUSIONS: Artificial intelligence chatbots offer medical students and educators a remote solution to improving student simulation practice. Future steps for OSCE.AI include expanding the number of cases provided, improving the accuracy of mark scheme triggering, and incorporating examination and investigation results into the app interface. There is also potential for medical schools to create custom chatbots in line with their specific curricula, as well as to expand the chatbots for post-graduate medical examinations and into other industries (e.g. nursing).

COMMUNITY BUILDING AMID COVID-19: STRATEGIES FOR INTERACTION WITH A GEN-Z CLASS

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PURPOSE: The pandemic has been a challenge for educators and students alike. Social distancing and isolation had a great impact on students who felt overwhelmed by academic load and news infoxication. The sense of building a community with the students, and helping them cope with uncertainty has never been more important. This abstract describes the implementation of two strategies that leverage social media and pop-culture to promote interaction and relaxation with gen-z students.

METHODS: The strategies were applied during the transition to an online model amid COVID-19 pandemic. An initial approach consisted of designing a meme that depicted an immunological process. The second was to narrate an immunological process with ‘posts’ resembling Twitter threads. To assess students’ perception on the strategies, an online survey was conducted. It considered a 5-point Likert scale, where 5 represents more favorable responses.

RESULTS: The 45 participants of the second year of the medical program, designed 60 memes and 20 Twitter threads. Students’ response was encouraging, they described the strategies as enjoyable (4.19) and engaging (4.04). They highlighted that the design process of the pop-cultural elements was fun (4.38), and that by including these strategies, they felt they integrated knowledge (4.62).

CONCLUSION: Following the public health measures to mitigate the spread of the virus, students felt discouraged or isolated in their houses. Leveraging gen-Z use on social media, strategies like these are a fun way to interact with peers and teachers, which has been beneficial to keep them grounded and focused on their training. Building community has become a priority of great importance, to host a bunker to anxiety and bad news, a safe-place to learn.

NEURAL NET ANALYSIS OF MEDICAL SCHOOL ADMISSIONS DATA

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RATIONALE AND PURPOSE: Neural nets are a class of deep learning artificial intelligence programs widely used in business, education and medicine. A neural net contains an input layer, an output layer, and one or more hidden layers not directly exposed to the input level, roughly corresponding to layers of analysis of the mammalian visual system (for review see Swingler, 1996). At each level, the equivalent of multiple non-linear logistic regression equations are generated and results are passed from layer to layer. Both feedback (back propagation) and feed forward optimize values of the beta coefficients, referred to as weights, unlike the static beta coefficients in a typical regression.

METHODS: We report application data from 200 medical school applicants. The data were anonymized and split to provide data from 100 applicants for neural network training and a second set of 100 applicants to test the model, i.e. can analysis of these data identify both potential successful and unsuccessful applicants? The ultimate output, successful or unsuccessful admission to medical school, is optimized on the basis of eight input variables constituting admission criteria. The program identifies admission variables best able to predict success in medical school. We have compared accuracy of the neural net with a related measure called genetic algorithm and with logistic multiple regression.

RESULTS AND CONCLUSIONS: The multiple regression correctly classified 89% of the sample in comparison with human analysis of the same data. Various MCAT sub-scales were much stronger predictors than GPA, major or undergrad school competitiveness (i.e. Princeton Review). Neural net analysis as well as three related genetic algorithms correctly classified 99.9% of the sample. Strongest predictors were Critical Analysis/Reasoning and the Chemistry/Physics subscale of MCAT. We conclude that neural net analysis is at least as accurate as human based analysis of admissions data.
ONLINE MEDICAL SIMULATION: A NEW NEED AT SCHOOLS OF MEDICINE

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PURPOSE: Due to the COVID-19 pandemic, clinical practice rotations were canceled in hospitals and in simulation centers, so it is presumed to use clinical simulation online as a teaching–learning tool for technical skills. Interns were trained as simulation and debriefing instructors, and online simulation practices were carried out on gynecology, cardiology and neurology subjects.

METHODS: An intervention was performed, as first a training course in simulation and debriefing practices was carried out for three medical interns from the simulation center. Cardiovascular physical examination, Leopold’s maneuvers and neurological physical examination were designed and carried out, with 10, 24 and 4 students participating, respectively. Checklists were designed to evaluate each of the competencies and the DASH (Debriefing Assessment for Simulation in Health) was selected to evaluate the quality of the debriefing and the simulation practice, which assesses six elements (using a 1–7-point Likert scale).

RESULTS: The percentage of students who achieved or did not achieve each competence was analyzed; they were contrasted with the results obtained from the DASH instrument in its three versions (the evaluator, the student’s and the instructor’s self-evaluation). In the results of the achievement of clinical competencies, it is observed that the students have passing results in the Leopold maneuver competence and neurological examination; however, the cardiovascular examination competence had negative results. Comparing with the results of the cardiovascular instructor’s DASH instrument (where it was “consistently effective”, 7), it could be stated that the objective of the intervention was met in the implementation of the practice, since the students assure in the DASH results that the practice “helps future performance”.

CONCLUSIONS: Clinical simulation practices in online mode can work to supplant or complement face-to-face practices in specific contexts, as long as there is adequate didactic planning, well-established learning objectives, and expert support for the creation of evaluation instruments, as well as good debriefing training.

THE UPLIFT PROJECT: A COMPREHENSIVE, OPEN-ACCESS GUIDE TO MEDICAL SCHOOL ADMISSIONS AIMED TO INCREASE EDUCATIONAL EQUITY FOR UNDERREPRESENTED PRE-MEDICAL STUDENTS

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PURPOSE: Despite ongoing efforts to recruit minority, low-income, and first-generation students into medicine, these student groups continue to be underrepresented among medical school matriculants. One factor contributing to this disparity is a lack of reliable and affordable advisory resources necessary for successfully navigating the pre-medical and application process. To address this, the UpLIFT (Underrepresented, Low Income, and First Time) Project aimed to create an open-access, scalable, web-based platform of comprehensive, up-to-date information about successfully applying to and matriculating into medical school.

METHODS: 26 students at the Perelman School of Medicine were recruited to write, design, and illustrate a comprehensive guide on the medical school application process, including guidance for completing pre-medical coursework, finding research/shadowing experiences, preparing for the MCAT, requesting letters of recommendation, writing applications, interviewing, and navigating financial aid processes. The guide is accessible to all backgrounds and assumes no prior knowledge about medical school or medical careers. It also includes sample essays, email/letter templates, course schedules, and budgets. The guide was disseminated via multiple platforms, including the UpLIFT website (https://upliftguide), social media, and direct outreach to undergraduate pre-health advisors. Downloads of the guide and website traffic were recorded, and end-user feedback was collected.

RESULTS: The UpLIFT Guide was launched online on August 27, 2020. Over the course of 13 weeks, the guide has been viewed 7223 times, viewed by 3373 unique users, downloaded 303 times, and used by 34 undergraduate institutions. The UpLIFT Guide has been used as an official resource by national pre-health advising organizations and endorsed by medical school faculty members and undergraduate pre-health advisors at several universities.

CONCLUSION: A recently launched, open-access, comprehensive guide to applying to medical school could mitigate the disparities in access to medical school for underrepresented premedical students. Future analysis will explore the admissions outcomes among students who utilized the guide.

DEVELOPING A BILINGUAL, COVID-19 ONLINE EDUCATIONAL PLATFORM

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CONCLUSIONS: The EP-HEAT platform provided an innovative, virtual route for outreach and engagement between the community, students, and faculty. Our long-term goals include covering other health-related topics that affect minority populations using our platform.

COMPLEMENTARY ROLE OF SHORT MESSAGE SERVICE (TEXT MESSAGE) IN REAL TIME FEEDBACK FROM STUDENTS IN PRE-CLERKSHIP COURSE EVALUATION

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PURPOSE: End-of-course evaluation surveys have long been the benchmark for gauging student feedback. However, this method has limitations of low participation and poor recall. SMS as a complementary feedback assessment tool could help overcome challenges in current evaluation systems. Though there is inherent value in end-of-course evaluations, this process alone does not paint a complete picture of nuanced student sentiments. A combination of succinct, real-time data in conjunction with a comprehensive, end-of-course evaluation could provide a better understanding of a course’s successes and challenges.

METHODS: 34% of the 2020 first year MD class (17 students) enrolled in our Fall 2020 SMS survey trial. The website SimpleTexting.com was utilized to send anonymous text messages in an organized and uniform manner. Students received no more than three text messages per week for pre-selected teaching activities. At the end of each designated session, SMS messages were sent to students asking them to select between a thumbs up (1) or thumbs down (2) via SMS. They were also given the option to write additional feedback in less than 160 characters. All responses were collected and analyzed.

RESULTS: 17 total students were enrolled in the study. 30 educational sessions were polled, resulting in an average individual response rate of 69.54%. 2 respondents had a 96.67% response rate, and 3 respondents had a 50.00% response rate. The average overall session rating was 1.18 (1 = Thumbs Up, 2 = Thumbs Down). The 2 lowest rated sessions received 11 comments with average for all sessions 3.87. Similarly, two of the highest rated sessions received 8 comments.

CONCLUSION: Real-time rating of the learning sessions can help increase the impact of student feedback for the course. Implementing SMS as a means of instantaneous feedback has the potential to increase student participation and allow for meaningful changes.

JUST IN TIME TEACHING (JITT) INFOGRAPHICS TEACHING TOOLS: APP DEVELOPMENT TO SUPPORT TECHNOLOGICALLY ASSISTED FACULTY DEVELOPMENT
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PURPOSE: Teaching in the clinical environment mostly originates from trainees or clinicians who are not formally trained or naturally skilled in teaching. Clearly defined and geographically accessible structured postgraduate trainee/faculty teaching resources are very limited. Access of evidence-based content is limited with teaching time constraints, delivery of relevant content at a point in time, and lack of knowledge where to find the resources in the moment.

METHODS: We will describe an innovation that applies to faculty and trainee development as a clinician educator. An electronic infographic teaching program utilizing technology-assisted modalities prepares trainees and faculty on how to teach and foster learning in busy clinical environments. The innovation will describe transition from an automated email software distribution platform to a phone App that resizes evidence-based infographics for distribution on mobile devices to trainee/clinician teachers to assure true ‘just in time’ accessibly, not bound by any geographic, institutional or financial barriers across the world.

RESULTS: We will share the Infographics as designed for clinical education. We will share all the intricate steps to create and maintain an innovative teaching application available to the public via a phone App. We will share preliminary implementation data, based on an internal satisfaction survey and analytics on usage and geographic distribution. All challenges will be shared as well as opportunities for partnership and collaboration. Future enhancement ideas will be explored.

CONCLUSIONS: JiTTs are effective resource to deliver timely relevant information to trainee and faculty. Based on lessons learned in App development, delivery and feedback from end users, future iterations will be shared to enhance content delivered and accessed. Faculty developers must expand their creativity for delivery of content and develop systems using technology-assisted modalities. Faculty and trainees must partner to reinforce the use of JiTTs in their clinical learning environment.

VIRTUAL JIGSAW CLASSROOM: A PILOT STUDY OF ONLINE DELIVERY DURING THE COVID19 PANDEMIC IN MALAYSIA

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PURPOSE: Jigsaw Classroom, a research-based cooperative learning technique, has been used in Family Medicine for several years. Recent Ministry of Higher Education, Malaysia advice during the COVID19 pandemic transferred all higher education teaching online. Therefore, we sought to develop a virtual framework for Jigsaw Classroom.

METHODS: This online pilot of 23 Year-4 Malaysian medical students (8 men, 15 women, Mage = 22.35, SD = 0.78) used Zoom for sub-group breakout rooms, in 4 phases: Phase 1: Introduction of the topic and components (without prior student knowledge or preparation). This was akin to seeing a new patient for the first time and working under time constraints. Phase 2: Discovery Phase: 9 sub-groups of 3 participants. The original sample (27 participants) were directed to learn about one topic component only using textbooks and digital devices. Each sub-group was in a single breakout room. Phase 3: Collaborative Phase: one student from each of the 9 sub-groups was brought together with students from each of the others to form 3 new sub-groups of 9 students each to share the learning discovered in Phase 1. Phase 4: All participants reconvened for sharing and discussion with faculty. The student Group Leader then developed a Powerpoint presentation later uploaded to Moodle VLE from which all Year-4 students could benefit.

RESULTS: Of the 23 respondents, 88.9% thought Virtual Jigsaw Classroom helped overcome student non-engagement, 85.2% believed it provided a comprehensive topic understanding, and 81.5% believed that it was a fun way to learn.

CONCLUSIONS: In this initial pilot, Jigsaw Classroom was replicable online, was well-accepted by students and reduced student non-engagement. With uncertainty about the duration of the pandemic educational impact, we are now planning to develop Virtual Jigsaw Classroom further with larger student numbers.

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