



RUTGERS

Robert Wood Johnson
Medical School

2022 Distinction Symposium Abstracts

Distinction in Leadership in Academic Healthcare

Melissa Coward and Eshan Kaul

Overcoming Barriers to Collaborative Learning: Pioneering a Virtual Student-Led Longitudinal Interprofessional Education (IPE) Elective

Project Mentors: Dr. Paul Weber, MD, RPh, MBA and Dr. Joyce Afran, MD

In today's complex health care system, physicians function as part of interprofessional teams, requiring medical students to be equipped with several systems-based competencies. The Institute of Medicine and AAMC have echoed the importance of interprofessional education (IPE), but organizational factors, inter-program diversity, and other structural challenges often hinder the development of longitudinal and sustainable IPE experiences. Recent shifts in the delivery methods of graduate medical education due to the COVID-19 pandemic provided an unexpected opportunity to utilize the virtual platform to overcome previous geographical barriers to IPE collaboration.

A longitudinal IPE non-credit elective (NCE) was developed to offer a case-based approach to cultivating interprofessional, teamwork, leadership, communication, and healthcare system competencies in preclinical students across Rutgers Biomedical and Health Sciences (RBHS). The development of the authors' personal and professional leadership and communication skills via the stewardship of this initiative from infancy to implementation is the focus of this distinction project. The authors identified and actively collaborated with a team of other motivated student leaders across Rutgers medical, nursing, physical therapy, physician assistant, and pharmacy programs to design, implement, and evaluate a student-run, virtual, case-based IPE NCE. In the 2020-2021 pilot, this year long NCE garnered interest from more than 100 students in various professional health education programs across Rutgers University, ultimately enrolling more than 60 students to ensure a balanced team structure. The overwhelmingly positive student feedback demonstrates that interdisciplinary collaboration, passionate student leadership, and the leveraging of virtual platforms can help overcome barriers to delivering scalable high-quality IPE.

Michael DiGaetano

POISED Communication: A Framework for Teaching Medical Students to Deliver Constructive Feedback in the Clinical Environment

Project Mentors: Archana Pradhan, MD, Siobhan Corbett, MD, and Carol Terregino, MD

Background:

The ability to convey useful and constructive information is a critical communication skill that physicians must develop in their careers as life-long learners. This project sought to implement a workshop on developing effective communication skills geared toward clinical settings. As a result of the COVID-19 pandemic, this project further sought to analyze the efficacy of virtual learning versus in-person learning in developing such skills.

Methods:

Students from the RWJMS classes of 2021 and 2023 responded to online surveys focused on comfort with communication, anxiety levels when communicating with others, and the ability to provide useful and constructive feedback to improve educational initiatives and workplace environment.

Results:

After completion of the virtual or in-person workshops, students reported increased comfort in providing critiquing feedback to both peers ($p<0.001$, $d=0.41$ and $p<0.001$, $d=0.34$ respectively) and administrators ($p<0.001$, $d=0.32$ and $p<0.001$, $d=0.21$ respectively). Participants also reported decreased overall anxiety regarding feedback provision in both virtual and in-person settings ($p<0.001$, $d=0.22$; $p=0.005$, $d=0.22$ respectively), with greater reduction seen in the in-person cohort. Participants in both sessions demonstrated improved ability to formulate and communicate feedback ($p=0.005$, $d=0.24$ and $p<0.001$, $d=0.34$ respectively).

Discussion:

Students reported greater confidence and comfort with delivering challenging comments after completion of either the in-person or virtual workshops, with the in-person group demonstrating larger reductions in anxiety than their virtual counterparts. Our findings reflect the usefulness of implementing workshops dedicated to developing communication skills while also highlighting the impact of in-person learning regarding developing such nuanced verbal skills.

Distinction in Global Health

Yasmine Hossam Elfarra and Christina G. Fakes

Cardiovascular Disease and Post-Traumatic Stress Disorder in Syrian Refugees

Determining the Implications of PTSD Symptoms on Cardiovascular Disease in the Syrian Refugee Population in Amman, Jordan

Project Mentors: Nora M. Cosgrove RN, Kristin Coppola PhD, Abel E. Moreyra, MD, and Javier Escobar, MD

Background: Post-traumatic stress disorder (PTSD) has been associated with increased risk of adverse health outcomes. While prior studies of Syrian refugees have shown high rates of non-communicable diseases associated with PTSD, the associations between PTSD and risk factors for cardiovascular disease (CVD) remain unexplored.

Methods: Participants ($n=136$) were recruited from Syrian refugees within a refugee health center in Amman, Jordan during July 2019. They completed the Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5) and a CVD risk factor screening tool. Blood pressure, height, and weight were measured. A Framingham 10-year CVD risk score was calculated, and associations between PTSD symptoms and CVD risk score were adjusted for age, gender, and smoking history.

Results: A provisional PTSD diagnosis was made in 38% of 136 participants. Among presumptive PTSD cases, systolic, diastolic, and mean arterial blood pressures were higher compared to those without presumed PTSD (CI: 1.2-12.0, 0.2-7.8, 0.8-9.0 respectively). Participants with presumptive PTSD diagnosis also had substantially higher odds of certain traumatic experiences, including combat (CI: 3.6-33.5), captivity (CI: 2.2-26.0), fire or explosions (CI: 1.6-10.3), and physical assault (CI: 1.5-7.7); they were also more likely to have a higher 10-year risk of CVD as measured by the Framingham Risk Score (CI: 0.002 - 0.045).

Conclusions: Syrian refugees with PTSD are more likely to have elevated blood pressure and higher 10-year risk of CVD compared to refugees without this disorder. Strategies in this vulnerable population should be implemented for the prevention of CVD.

Jaineel Kothari

Treatment and Cultural Differences for Chronic Disease Management in America and China: A Survey on Hypertension Treatment and Student Research Experience Abroad

Shane S. Neibart

Assessment of Cervical Cancer Prevention and Treatment Infrastructure in Belize

Project Mentors: Dr. Shawna V. Hudson, Dr. Gregory L. Peck, Dr. Joseph S. Hanna, Dr. Mark H. Einstein (Principal Investigator)

Belize has one of the highest cervical cancer burdens among Latin American and Caribbean countries, despite the implementation of policies to increase access to prevention and treatment services. This study evaluates the policies, infrastructure, and workforce of the cervical cancer management system in Belize to inform capacity-building efforts.

In 2018, health facility assessments were conducted across all six districts of Belize, at the national pathology facility, and 12 public facilities identified as critical to cervical cancer control. Human and infrastructure resource availability and existing policies related to cervical cancer screening and treatment services were assessed through a structured instrument.

The public cervical cancer screening workforce in Belize consists of 75 primary care nurses and physicians-one per 1,076 screening-eligible women, with 44% conducting rural outreach. All districts have at least one screening facility, but 50% perform screening services only once per week. Colposcopy and loop electrical excision procedures are available in three and four districts, respectively; radical hysterectomy and chemotherapy are available in two districts; and radiation therapy is unavailable. Of essential pathology equipment, 38.5% were present and functional, 23% were present but nonfunctional, and 38.5% were unavailable. Additionally, 35% of supplies were unavailable at the time of assessment, and 75% were unavailable at least once in the 12 months before assessment.

Public-sector services differ among districts, with tertiary services concentrated in the largest district. Screening, outreach, and pathology are limited by resource availability. This study characterizes the current capacity of services in Belize and pinpoints health system components for investment.

Marlena E. Sabatino

Access to Pediatric Cardiac Surgery in Colombia: A Population-based Study

Project Mentors: Dr. Gregory L. Peck and Dr. Javier Escobar

OBJECTIVE: Globally congenital heart disease mortality is declining, yet the proportion of infant deaths attributable to heart disease rises in Colombia and other middle-sociodemographic countries. We aimed to assess the accessibility of pediatric cardiac surgery (PCS) to children <18 years of age in 2016 in the South American country of Colombia.

METHODS: In Bogotá, Colombia, a multi-national team used cross-sectional and retrospective cohort study designs to adapt and evaluate 4 health system indicators at the national level: first, the population with timely geographic access to an institution providing PCS; second, the number of pediatric cardiac surgeons; third, this specialized procedure volume and its national distribution; and fourth, the 30-day perioperative mortality rate after PCS in Colombia.

RESULTS: Geospatial mapping approximates 64% (n = 9 894 356) of the under-18 Colombian population lives within 2-h drivetime of an institution providing PCS. Twenty-eight cardiovascular surgeons report performing PCS, 82% (n = 23) with formal training. In 2016, 1281 PCS procedures were registered, 90% of whom were performed in 6 of the country's 32 departments. National non-risk-adjusted all-cause 30-day perioperative mortality rate after PCS was 2.73% (n = 35).

CONCLUSIONS: Colombia's pediatric population had variable access to cardiac surgery in 2016, largely dependent upon geography. While the country may have the capacity to provide timely, high-quality care to those who need it, our study enables future comparative analyses to measure the impact of health system interventions facilitating healthcare equity for the underserved populations across Colombia and the Latin American region.

Sophia Toles

Combatting the Global Tobacco Epidemic: A Comparison and Discussion of the Strategies and Successes of the United States and Brazil

Project Mentors: Dr. Mara Rubia, Dr. Karen Lin

Introduction and Objectives

Global progress in the fight against tobacco epidemic has been monitored by the World Health Organization (WHO) every two years since 2008 using the MPOWER measures, which are as follows:

- 1) Monitoring and Preventing Tobacco Use
- 2) Protecting others from the harms of tobacco
- 3) Offering to help quit tobacco use
- 4) Warning about the dangers of tobacco
- 5) Enforce bans on tobacco advertising, promotion and sponsorship
- 6) Raising Taxes on Tobacco

Despite this progress, Brazil and Turkey still remain the only two countries that have adopted all MPOWER measures at best-practice levels, so there is still more work to be done to combat tobacco globally.

Considering this, the objectives of this paper are:

- 1) To write an overview on tobacco and its Global Burden.
- 2) To compare and to discuss the strategies for success in the fight against tobacco used in Brazil and the United States, according to the MPOWER measures.

The reason why the United States and Brazil are being compared is because of their similarities and close relationship in several areas including size, governmental structure, and even COVID-19.

Methodology

In order to compare both countries and thus identify Brazil's strategies for success and areas of improvement for the United States, I will outline each country's approach to each of the 6 MPOWER measures from when they were first implemented to the present day based on a short review of a variety of historical resources, as well as the WHO's biannual evaluation of global progress against the tobacco epidemic.

Discussion

The bans on advertisement and the efforts to protect others from the effects of secondhand smoke highlight how coordination at the highest level of government seems to have been a major factor in Brazil's success. This level of coordination is seen in how Brazil established legislation to address the prevention of tobacco use as well as to adopt WHO FCTC guidelines, which, the United States has still yet to do.

Fortunately, both countries have made the necessary services for quitting tobacco widely accessible and have the appropriate warnings about the negative effects of tobacco in multiple different media forms. Currently, the FDA in the United States is advocating for more graphic images in cigarette packaging, similar to those found in Brazil. Finally, both countries can make alterations to their taxation strategies to make tobacco products, specifically cigarettes, less affordable. This can help to combat the illicit cigarette trade in Brazil and to combat cigarette use amongst the youth in the United States.

Neha Wadhavkar

Improving Self-Efficacy in Latina Women with Type 2 Diabetes: Global & Local Populations

Project Mentors: Dr. Sonia Garcia Laumbach and Dr. Karen Lin

INTRODUCTION:

Diabetes is a chronic illness with a complex etiology, and management strategies are often hindered by cultural barriers. Existing literature supports that the prevalence of diabetes has been increasing dramatically in Latina women. In the Dominican Republic, the prevalence of diabetes increased from 7% to 10% in women in the last decade, versus 6% to 7.8% in men. Similar patterns exist in the United States, with a higher prevalence of diabetes in women of Hispanic background (17.1%) versus men (16.5%). The purpose of this study is to construct a culturally-tailored diabetes educational intervention and assess whether it enhances self-efficacy in Latina patients to change dietary habits.

METHODS:

34 Spanish-speaking female patients aged 25-65 from Promise Clinic or FMMS were included in the study. A 7-minute pre-recorded educational video was presented to participants. Pre- and post-session surveys with Likert scale responses were administered to quantify self-efficacy. Participants served as their own controls. Statistical analysis relied on a two-sample t test.

RESULTS:

The educational session resulted in a statistically significant increase in self-efficacy from an average of 76.2% to 95.3% ($p < .001$), using a 95% confidence interval. Other baseline characteristics, such as country of origin and English proficiency, were also included in the analysis.

DISCUSSION:

The Latinx community makes up almost 20% of the United States population. Healthcare providers should remain cognizant of how cultural barriers influence health outcomes. In tailoring culturally appropriate diabetes management strategies, similar to those in our study, a change in mindset and positive health outcomes may be achieved in Latina patients.

Distinction in Research

Akhil Avunoori Chandra

Identification of oncological characteristics associated with improved overall survival in patients with adrenocortical carcinoma treated with adjuvant radiation therapy: Insights from the National Cancer Database

Project Mentors: Alexander Kutikov, MD, FACS - Temple Health/Fox Chase Cancer Center, Philadelphia, PA and Andres F. Correa, MD - Temple Health/Fox Chase Cancer Center, Philadelphia, PA

Objectives: To test for an association between oncological risk factors and overall survival in patients with non-metastatic adrenocortical carcinoma treated with adjuvant radiation therapy at high-risk for recurrence per NCCN guidelines.

Materials and methods: We analyzed data from patients undergoing surgical resection with or without aRT in the NCDB from 2004 to 2017. A multivariable Cox proportional hazards model was fit to assess for an association of aRT and OS. To determine whether aRT was associated with improved OS in patients with specific NCCN risk factors, we fit three multivariable Cox proportional hazard models with an interaction term between NCCN risk factors and the use of aRT.

Results: We identified 1,433 patients treated surgically for adrenocortical carcinoma with at least one risk factor. 259 patients received adjuvant radiation therapy (18%) while 1,174 (82%) patients did not. After adjustment, we noted a significant association between adjuvant radiation therapy and overall survival in the entire cohort in the multivariable Cox proportional hazards model (HR 0.68, 95% CI 0.55-0.85, P = 0.001). Adjuvant radiation therapy was associated with increased overall survival in patients with positive surgical margins (HR 0.47, 95% CI 0.35-0.65, P < 0.001), large tumor size ≥ 6 cm (HR 0.69, 95% CI 0.55-0.87, P = 0.002), and high-grade disease (HR 0.61, 95% CI 0.37-0.99, P = 0.046).

Conclusions: Patients with ACC at high-risk for recurrence were associated with improved overall survival when treated with adjuvant radiation therapy. These data may help identify which patients should consider aRT after resection of clinically localized ACC.

Danika Baskar

Assessing Knowledge About Elevated Pre-Pregnancy Weight – An Early Opportunity to Improve Maternal and Fetal Outcomes

Project Mentors: Dr. Gloria A. Bachmann, Dr. Anna Petrova, and Dr. Ambarina Faiz

Background: Studies show almost half of US women commence pregnancy above a healthy weight range, yet data about preconception weight risk knowledge among those who plan to conceive is limited. This study assessed whether women receive counseling about their weight prior to conception and if there was a relationship between Body Mass Index (BMI) and pre-pregnancy weight counseling.

Methods: Women who were between ages 18 and 50, pre-menopausal, and not pregnant were enrolled. Consented participants completed a study questionnaire, and their BMI was obtained from medical records for analysis along with survey responses.

Results: The mean age of participants was 34 years (n=112). Of the women who expressed intent to conceive within the next ten years, 58% were overweight or obese based on recorded BMI. Although 95% of women agreed that it is appropriate for their healthcare provider to have discussions about a healthy pre-pregnancy

weight, only 46% reported having conversations with their physician about maintaining a healthy lifestyle prior to conceiving. There was no significant association identified between women who were underweight or at a normal weight versus those who were overweight or obese in whether providers engaged in conversations about optimizing health before pregnancy ($p = 0.059$). Overall, 90% of women agreed they would consider improving their health before becoming pregnant.

Conclusion: Women who are overweight or obese may benefit from pre-conception weight counseling from their healthcare provider. These discussions may encourage healthy behaviors to promote weight management and lessen complications related to elevated pre-pregnancy BMI.

Pooja Patnaik

Adherence to the Clinical Practice Guidelines and Disposition of Pediatric Patients with Simple Febrile Seizures from Emergency Department

Project Mentor: Dr. Ernest Leva., MD, FAAP

Talia Sara Schwartz

Effects of Participation in a U.S. Trial of Newborn Genomic Sequencing on Parents at Risk for Depression

Project Mentors: Ingrid A. Holm, MD, MPH - Boston Children's Hospital, Harvard Medical School

Gloria A. Bachmann, MD - Rutgers Robert Wood Johnson Medical School

Arnold B. Rabson, MD - Rutgers Robert Wood Johnson Medical School

Much emphasis has been placed on participant's psychological safety within genomic research; however, few studies have addressed parental psychological effects associated with their child's participation in genomic research, particularly when parents meet the threshold for clinical concern for depression. We aimed to determine if parents' depressive symptoms were associated with their child's participation in a randomized-controlled trial of newborn exome sequencing. Parents completed the Edinburgh Postnatal Depression Scale (EPDS) at baseline, immediately post-disclosure, and 3-months post-disclosure. Mothers and fathers scoring at or above thresholds for clinical concern on the EPDS, 12 and 10 respectively, indicating possible Major Depressive Disorder with Peripartum Onset, were contacted by study staff for mental health screening. Parental concerns identified in follow up conversations were coded for themes. Forty-five parents had EPDS scores above the clinical threshold at baseline, which decreased by an average of 2.9 points immediately post-disclosure and another 1.1 points 3-months post-disclosure (both $p \leq 0.014$). For 28 parents, EPDS scores were below the threshold for concern at baseline, increased by an average of 4.7 points into the elevated range immediately post-disclosure, and decreased by 3.8 points at 3-months post-disclosure (both $p < 0.001$). Nine parents scored above thresholds only at 3-months post-disclosure after increasing an average of 5.7 points from immediately post-disclosure ($p < 0.001$). Of the 82 parents who scored above the threshold at any time point, 43 (52.4%) were reached and 30 (69.7%) of these 43 parents attributed their elevated scores to parenting stress, balancing work and family responsibilities, and/or child health concerns. Only three parents (7.0%) raised concerns about their participation in the trial, particularly their randomization to the control arm. Elevated scores on the EPDS were typically transient and parents attributed their symptomatology to life stressors in the postpartum period rather than participation in a trial of newborn exome sequencing.

Seiichi Villalona, M.A.

Racial/Ethnic Disparities in HPV-Related Oropharyngeal Cancer Outcomes among Males in the United States: A National Cohort Study

Project Mentors: Jeanne Ferrante, MD, MPH

Antoinette Stroup, PhD

Background: Little is known regarding differences in male human papillomavirus-related oropharyngeal cancer incidence and outcomes by race/ethnicity. We evaluated age-adjusted incidence trends, late-stage diagnosis, survival, and cancer-specific mortality among males diagnosed with human papillomavirus-related oropharyngeal cancer.

Methods: In this population-based retrospective cohort study, we identified males diagnosed with oropharyngeal cancer in the United States from 2005 to 2016 in the North American Association of Central Cancer Registries. Associations of race/ethnicity with late-stage diagnosis, cancer-specific survival, and mortality were compared using multivariable logistic and Cox proportional hazard analysis, respectively, adjusting for age, health insurance, county level attributes of residence and poverty, stage at diagnosis, and geographic region of the United States.

Results: The majority of the 162,183 human papillomavirus-related oropharyngeal cancers were in Non-Hispanic White males (84.2%), with 50% increase in late-stage cancer incidence among White males from 2005 to 2016. Despite having similar odds of late-stage diagnosis as White males, Hispanic and Non-Hispanic Black males had higher cancer-specific mortality (adjusted hazard ratios [aHR] 1.17; 95% CI 1.08, 1.26, and aHR 1.79; 95% CI 1.71, 1.88, respectively). Adjusting for treatment attenuated, but did not eliminate, the higher mortality in Hispanic and Black males.

Conclusions: Non-Hispanic White males are disproportionately affected by late-stage human papillomavirus-related oropharyngeal cancer, while Hispanic and Non-Hispanic Black males have higher cancer-specific mortality that was not explained by stage or treatment modality. Interventions to increase human papillomavirus vaccine uptake, early detection, and treatment of oropharyngeal cancer in males are needed to decrease disparities in incidence and mortality.

Distinction in Inclusion and Diversity

Tracey S. Otto, MS

Stepping Stones: A Student Perspective on Establishing Tangible Diversity, Equity and Inclusion Initiatives within an Academic Institution

Project Mentors: Dr. Cato-Varlack, Cynthia Ferrer-Cespedes, Dr. Whitley-Williams, Dr. Ayers

Diversity, Equity and Inclusion (DEI) are critically important. As institutions of higher learning, it is imperative that medical schools, in developing the physicians who will care for diverse populations, value these tenets by prioritizing and fostering inclusive learning environments. The development of DEI initiatives and importantly, the integration of DEI as a pillar of medical education training lays a critical foundation for a robust learning environment benefitting not only student learners (regardless of ability, race, sexual orientation, spoken/written language, etc) but staff, faculty and ultimately, patient care.

This distinction project aims to describe how student experiences within the preclinical and clinical learning environments (2017-2020) at Rutgers-Robert Wood Johnson Medical School led to the isolation of specific policy needs and identification of potential challenges to implementation. Additionally, it intends to

highlight the critical impact of the Black Lives Matter Movement (notably June 2020) in catalyzing the development of 1) a Student Advisory Board and 2) anonymous microaggressions document, which served as critical tools in developing DEI initiatives centered on curriculum development and reform. Lastly, this project aims to underline how these changes, through collaborative efforts with staff and faculty and on par with national medical education efforts, tangibly fostered a more inclusive learning environment for all students including those identifying as underrepresented in medicine (URiM).

Distinction in Medical Education

Gabriela Alvim de Paula

The Importance of Adding Closed Captioning to Podcasts for Learning and Application

Project Mentor: Kristen M. Coppola, Ph.D.

Most medical schools use recording device systems to produce online lecture material, with the low cost and general appeal of podcasting being some of the reasons for its popularity¹. Most institutions do not readily offer closed captions to accompany lecture material, although current research supports the value in doing so. Paivio's (1986) dual-coding theory suggested that learning in two modes (auditory and written) stimulates the imagery and verbal systems, leading to superior depth of processing and improved recall². Closed captions also benefit students whose English is second language³. Captioned lecture podcasts are mostly available on an as needed basis at many institutions with cost and technology requirements being barriers to use⁴. In this pilot project, learning comprehension, perceptions, and satisfaction after exposure to captioned lecture podcast versus non-captioned lecture podcasts was examined.

Methods & Results/Conclusions:

Master of Biomedical Sciences students (N=25) were randomly assigned to either watch a 7-minute Cardiology podcast with and without captions. Content knowledge was then assessed after a brief delay with multiple choice questions. Survey and open-ended questions assessed student preferences for using captions and the reasons they would or would not want captions included. Preliminary results indicated that students who had captions (M =5.54 correct) scored higher than students who did not have captions (M =4.08 correct). Overall students responded positively to the captions and desired captions for use in their courses. Future research should follow students and examine the effect of captioned learning on memory over time.

References:

1. Cho, D., Cosimini, M., & Espinoza, J. (2017). Podcasting in medical education: a review of the literature. *Korean journal of medical education*, 29(4), 229.
2. Perez, M. M., Van Den Noortgate, W., & Desmet, P. (2013)
3. Shaw, G. P., & Molnar, D. (2011). Non-native english language speakers benefit most from the use of lecture capture in medical school. *Biochemistry and Molecular Biology Education*, 39(6), 416-420.
4. Morris, K. K., Frechette, C., Dukes III, L., Stowell, N., Topping, N. E., & Brodosi, D. (2016). Closed Captioning Matters: Examining the Value of Closed Captions for "All" Students. *Journal of Postsecondary Education and Disability*, 29(3), 231-238.

Michael DiGaetano

Anxiety in the Face of Change: First Year Students' Attitudes About USMLE Step 1 Before and after the Change to Pass Fail

Project Mentors: Dr. Kristen Coppola PhD, Dr. Hanin Rashid PhD, and Dr. Robert Lebeau EdD

Background:

Previous research highlights students' concerns over the impact of the "Step 1 Climate", with reports of substantial anxiety regarding the exam and the residency selection process. The current study examined knowledge and attitudes about Step 1, and the impact of the change to Pass/Fail grading on the anxiety/behaviors of medical students in their first-year.

Methods:

191 RWJMS students from classes of 2022 and 2024 responded to an online survey upon completing their respective academic year one. Questions examined Step 1 knowledge, use of Step-specific study resources, anxiety, and reasons for incorporation of study aids. Students in the class of 2024 then commented on how the impending change to pass/fail influenced their study and anxiety.

Results:

Overall, students had low knowledge regarding the exam details. Anxiety regarding USMLE Step 1 was lower for the class who will take Step as Pass/Fail ($p = 0.014$) although almost half reported that Pass/Fail grading was either not effective at reducing anxiety or further increased anxiety concerning the residency application process. Study behaviors for balancing coursework and Step 1 preparation were not found to be statistically different ($p=0.365$).

Discussion:

Our results indicate that in these first year students, low levels of knowledge concerning Step 1 as well as use of peers and "peer" internet forums may propagate pervasive anxiety. Students have expressed concern that some of that anxiety may be more distributed onto other elements of consideration in the residency selection process as they wonder what will fill the void left by Step 1.

Mark Danila and Cynthia Zheng

Using Team-Based Learning as A Method to Acquire Point-of-Care Echocardiography Skills During Preclinical Medical Education: A Pilot Study

Project Mentors: Catherine Chen MD, Grace Pinhal-Enfield PhD

Background: There is an increased interest in using point-of-care ultrasound (POCUS) to teach preclinical anatomy and physiology in medical school due to its ubiquitous application. We designed and implemented a team-based learning session to integrate anatomy, physiology, and ultrasound education within our introductory cardiovascular system course called Team-Based Learning – Ultrasound (TBL-US). **Methods:** The session consisted of a (1) podcast introducing transthoracic echocardiography, (2) pre- and post-knowledge assessment, and (3) hands-on session. Six second-year students were trained to facilitate the sessions under the supervision of a physician with POCUS expertise. Pre- and post-module surveys assessed the impact of the session. During analysis, students were sub-divided into low- and high-performers using anatomy exam grades to account for differences in scholastic performance. The cardiovascular final exam grade of participants and non-participants were compared. **Results:** 54 first-year medical students completed TBL-US. A majority reported that TBL-US increased understanding in cardiovascular anatomy, physiology, and ultrasound. Using the mean, participants significantly showed improvement on the post-knowledge assessment compared to the pre-knowledge assessment (70.5% vs 54.9%). They significantly scored higher on the exam compared to non-participants (84.92% vs. 81.02% for low-performers and 89.22% vs. 85.95%

for high-performers). Discussion: Students found TBL-US to be a valuable teaching modality. Our session was associated with improved understanding and confidence, and higher exam scores. Therefore, TBL-US can be used to effectively augment the learning of anatomy, physiology, and ultrasound.

Abha Kulkarni

Specialty-Based Objective Standardized Clinical Examinations (OSCEs) to Assess Medical Students' Ability to Deliver Bad News In-Person or Virtually

Project Mentor: Archana Pradhan, MD, MPH

The assessment of readiness of a medical student to enter residency must include an assessment of their ability to deliver bad news, as highlighted by guidelines set forth by the Accreditation Council for Graduate Medical Education (ACGME) and the Association of American Medical Colleges (AAMC). We present Objective Standardized Clinical Examination (OSCE) cases to simulate delivering bad news in seven specialties—Emergency Medicine, Family Medicine, Internal Medicine, Obstetrics-Gynecology, Pediatrics, Psychiatry, and Surgery. These OSCEs were administered in-person and virtually. The OSCE was administered to 159 fourth year medical students during a Transitions- to-Residency course, specific to the specialty of their choosing. Student performance was evaluated using the SPIKES protocol and the Empathy and Clarity Rating Scale (ECRS). In-person OSCEs were administered using CAE Learning Space Enterprise. Virtual OSCEs were administered using Cisco Webex video and RedCap. Analysis of Variance (ANOVA) was performed on rating scales followed with Tukey Post-hoc tests. Students performed well with mean scores ranging from 3.76 to 4.32 on ECRS and 3.51 to 4.14 on SPIKES. No differences were found by clerkship for either scale. In all scenarios, student ratings of less than satisfactory performance could be observed (scores less than 2) as well as examples of residency level skill (scores of 5). This set of OSCEs was developed for ease of use in a Transitions-to-Residency course or clerkship. OSCEs are comparable in terms of direction and difficulty and provide a way for all students to be evaluated within the context of a specific specialty.

Dale Oommen

Improving Nutritional Competency in the Preclinical Years

Project Mentors: Dr. Malvika Kaul and Dr. Robert Lebeau

Non-communicable chronic diseases account for a large proportion of the healthcare burden in the U.S. Advocating for a healthy lifestyle has been shown to be an effective approach to mitigate risk factors associated with such diseases. However, nutritional counseling is not routinely provided during patient visits, with physicians citing insufficient knowledge and training as one of the main barriers. Incorporation of structured curricular activities during medical school that give students an opportunity to enhance nutritional knowledge and skills before entering the clinical space would improve their ability to discuss healthy lifestyle choices with patients. This study aims to assess the efficacy of nutritional didactics on nutritional competency. In order to accomplish this, 42 medical students took a twelve item knowledge oriented test before and after a one hour long lecture focused on the links between medicine and diet. Students performed significantly better on the test following the lecture ($p < 0.05$). Furthermore, the percentage of students that reported viewing knowledge as an obstacle to obtaining a dietary history decreased (Pre: 62%; Post 29%). Further research is warranted to explore what types of nutritional didactics are most effective.

Vaishnavi Warriier

Assessing Medical Students' Empathy When Breaking Bad News and Obtaining Informed Consent in Emergency Medicine

Project Mentors: Archana Pradhan, MD, MPH, Laryssa Patti, MD FACEP, and Kristen Coppola, PhD

Teaching empathy is a crucial skill in the clinical curriculum, but gaps in how to best assess the skill in patient encounters are significant especially in emergency medicine (EM). A two-station objective structured clinical examination (OSCE) for breaking bad news (BBN) and obtaining informed consent (IC) was developed. The objective of this study was to compare standardized patients' (SP) assessments of student empathy with students' self-assessments to see if empathy differed by type of news delivered. The OSCE was administered to 4th year medical students pursuing EM (N=13). ECRS scores for the BBN and IC OSCEs were compared using paired t-tests. Next, agreement between SPs and student scoring was calculated using Cohen's kappa (κ) coefficient. SPs rated all students above 4 in all four ECRS domains for the BBN and IC cases. SP ECRS ratings showed a significant difference by case with higher mean ratings given for the IC case in two out of four ECRS domains: 'Providing Information' and 'Helping the Patient to Make Decisions.' Students' self-assessment ratings were not significantly different between cases. For the BBN case, fair agreement was found between SPs and students for 'Fostering Relationship/Supporting Emotions' and moderate agreement was found for 'Helping the Patient to Make Decisions'. There was no significant agreement for any of the items in the IC OSCE. Communication competency was high for students in our sample. Student perceptions of their abilities remained the same in both cases, but SPs were able to differentiate varying levels of empathy, suggesting that students may not be as aware of changes in their own communication. These cases are useful in assessing student performance and as a tool for feedback for advanced communication.

Cynthia Zheng

Teaching Trans-centric Curricular Content Using Modified Jigsaw

*Project Mentors: Dr. Robert Zachow, Dr. Rob Lebeau, Dr. Gloria Bachmann
(Special thanks to Zoe D'Costa, M3, who also assisted with this project)*

Introduction: Transgender (trans) individuals have unique medical needs and often have difficulty accessing quality healthcare that is also welcoming. These challenges are exacerbated by inadequate provider knowledge on how to comprehensively care for trans patients. Incorporation of trans healthcare into medical school curricula has increased in past years to address this educational gap. This study examined the impact of a voluntary 2-hour modified jigsaw, run by medical students with faculty input, to supplement education on trans healthcare.

Methods: The jigsaw was implemented both in-person and virtually over two years for pre-clerkship medical students. A pre-/post-test design was used to compare knowledge, attitudes, and beliefs of students before and after participation.

Results: Participants' initial attitudes and beliefs towards trans healthcare were highly positive and did not change. Participants did show increases in knowledge and self-confidence discussing gender identity and clinical care after the session. All students expressed interest in further training, and felt this session enhanced their understanding of trans health care and reproductive physiology. On 1-year follow-up, students showed decreased knowledge and self-confidence in discussing trans health; however, scores remained higher than pre-session scores. Student surveys suggested formal integration of more trans health education into the curriculum.

Discussion: As expected, medical students increased their knowledge and self-confidence regarding trans medicine. Students also felt that the modified jigsaw was an effective teaching method. Though long-term effects were attenuated, the results of this educational intervention suggest that ongoing education, especially peer-to-peer, is an important tool in optimizing trans health care.

Distinction in Service to the Community

Stephanie Chisom Amaefuna

(presented at the 2021 symposium)

Science Career Exploration and Healthy Living (SCEHL)

Project Mentors: Dr. Eric Jahn, Susan Giordano, Maria Pellerano

Science Career Exploration and Healthy Living (SCEHL) was created to address the underrepresentation of specific racial and ethnic minorities within the healthcare field. Literature has supported the notion that mentoring and medical exposure to youth can positively influence future career choice exploration. According to the U.S. Census Bureau, over 60% of the New Brunswick population is made up of Hispanic/Latinos and Black/African Americans. In partnership with the Civic League of Greater New Brunswick, a not-for profit community-based organization focused on strengthening minority families, the Science Career Exploration and Healthy Living Initiative was created.

Science Career Exploration and Healthy Living encourages 7th and 8th grade students in the New Brunswick Community to explore careers in healthcare. The monthly meetings involve mentoring, interactive workshops related to medicine and health, and healthcare career panel discussions. These workshops ranged from performing physical exams with stethoscopes to discussing mental health and coping mechanisms with one another. The activities encouraged students to enhance their leadership, collaboration, and problem-solving skillsets. Meetings also engaged the students in discussions about health disparities in urban communities and their role in living a healthy life. Each year, a panel of minority healthcare professionals was assembled to talk with the students about their journeys into their respective healthcare fields. Students were given the opportunity to ask questions and breakout into smaller groups with speakers whose career paths they found most interesting. This project served as a practical tool to encourage healthcare career exploration as well as healthy living among middle school students in New Brunswick.

Hannah Bava, Ijeoma Unachukwu, Joseph Hawes, Krysten Mayers

MedTalks: A Program to Increase Health Literacy in People with Disabilities

Project Mentor: Dr. Betsy Matthew

This program, entitled MedTalks, was developed to serve adults with disabilities at The Arc of Somerset day habilitation programs. Our mission is to provide the participants with important medical education in order to build health literacy and self-advocacy. Our DISC team created monthly PowerPoint presentations with topics ranging from the COVID vaccine boosters to the importance of healthy relationships and physical boundaries. We worked together with our community partners to integrate our MedTalks into a Zoom schedule already in place at the Arc of Somerset. Though our project has evolved over time, our goal has always been to educate participants on relevant health and wellness topics. Most recently, we established a relationship with the Advocates for Change group at the Arc. The Advocates For Change self advocacy group is open to any individual with an intellectual and/or developmental disability that is interested in advocating for him or herself. Students from HIPHOP's PAIR elective give MedTalks to the Advocates for Change, and participants in turn have the chance to ask questions and interact with the material. Overall, this

format teaches medical students important skills like disseminating health information in a way that is easy to understand, while also complementing our mission of improving health literacy for the participants. Throughout the project, surveys are given twice a year to assess the receptibility and impact of the MedTalks. This allows the speakers to further understand this patient population and determine how material should be delivered and how information is absorbed.

Nicole Katchur (PhD2), Deep Raole (M4), Matt Nasra (M4), and Kristi Blackledge (M4)

BraInSTORM: Brain Injury Safety Training On Recreational Sports Modules

Project Mentor: Dr. Jaime Levine

Between 2001-2012, over 3.5 million children visited the emergency room for sports-related traumatic brain injury (TBI), demonstrating a need for concussion awareness, recognition, and prevention. To address this need, we created an interactive, lecture-based curriculum that targets community-based coaches, referees, and parents that do not have formal training on TBIs. Our goal was to teach appropriate concussion prevention, recognition, and response in youth sports and physical activities. With this target population in mind, we have partnered with local community leaders at the Metuchen Sportsplex and the Raritan Bay Area YMCA. Specifically, the Sportsplex employs volunteer coaches without formalized concussion training, and the YMCA was tasked by the Raritan Bay Medical Center to provide physical education programming to the community. Since these two sites were seeking educational tools, and these are two sites in which youth sports-related injuries can occur, we adapted our project to suit their individual needs. Our project involved giving our interactive presentation, complete with a pre- and post-survey to measure baseline vs. post-presentation knowledge surrounding TBI care, twice annually at each site. We periodically received feedback from our community partners and subsequently tailored our presentation to target their specific questions. Analysis of our pre- and post-survey revealed either no change or an increase in percentage correct between pre- and post-surveys following our presentation. Fortunately, in response to the COVID-19 pandemic, we were able to adapt our presentation to a virtual format, thereby having the ability to continue to offer our presentation throughout this time.

Alejandra Bolanos-Delgado, Samantha Hanciles, Ngozi Anaemejeh, Alexis Etheridge

The Impact of EmpowerU on Health Literacy of Older Adults in Somerset County

Project Mentor: Janice Cato-Varlack, MD

Health literacy is an important social determinant of health. An individual's ability to make decisions and take actions to manage their health is significantly affected by the level of knowledge they have. EmpowerU is a program created by medical students with the purpose of advancing health literacy initiatives specifically in the older adult population. This program was designed by first conducting a needs assessment of the target population, then we determined best methods to reach the population and an appropriate way to measure outcomes. We created several workshops on topics that most frequently affected our target population. Workshops were designed to be as interactive as possible and include a pre and post test questionnaire to measure the value each workshop provided to participants. We collected feedback from community partners and participants, which provided a qualitative outcome measure. In the future, we hope to maintain relationships with our community partner and create innovative ways to ensure the longevity of our project.

