the course and felt it was very relevant and applicable to their practice.

126

20 YEARS SHAPING A NEW GENERATION OF HISPANIC CLINICAL AND TRANSLATIONAL RESEARCHERS: UPR-MSC POSTDOCTORAL MASTER IN CLINICAL & TRANSLATIONAL RESEARCH PROGRAM

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OBJECTIVES/GOALS: This project presents the Post-doctoral Master of Science in Clinical and Translational Research (MSc) program's outcomes in 20 years of its implementation. This program is a joint offering between the Schools of Health Professions and School of Medicine of the University of Puerto Rico. METHODS/STUDY POPULATION: This study consists of secondary data analysis of academic and administrative documents. It also includes data from the Annual Evaluation retreats reports and an Alumni Follow-up Survey using an electronic questionnaire. All 121 Scholars admitted to the program from academic years 2003 to 2023 were included in the sample. Data analysis included descriptive statistical analysis of quantitative data and qualitative content analysis regarding recruitment/admissions, faculty composition, curriculum design, Scholars' outcomes, and program's financial support sources. Quantitative data were analyzed using the statistical software SPSS. RESULTS/ANTICIPATED RESULTS: Scholars of the program had been recruited from the UPR-MSC and several partner institutions with diverse backgrounds, disciplines, and research areas. Faculty and committee members have representation from the six MSC-Schools and partner institutions. The academic Program structure has changed over the years, and currently, more than 65% of the courses are offered online. Several financial sources have been identified to support the scholars. The Scholars' portfolios of grant submission and publication productivity evidence the program's success. Graduates have also been successful in advancing to positions that foster research impacting Hispanics. DISCUSSION/SIGNIFICANCE: The Post-doctoral Master's in Clinical and Translational Research program (MSc) has contributed to the formation of committed Hispanic clinical and translational researchers impacting minorities and contributing to diversity in the research workforce.

127

Advance RI-K Scholar Career Development Program: A one-year intensive program for developing early career faculty in an IDeA state

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OBJECTIVES/GOALS: We developed a state-wide program to support early career faculty in preparing mentored career development awards, and connect them to resources, mentorship, and career development opportunities. We aimed to build self-efficacy along multiple axes, including research design and grantsmanship, and to facilitate networking with mentors and peers. METHODS/STUDY POPULATION: The program recruited four cohorts of faculty over the course of four years, for a total of 32 faculty participants (63% physician scientists). Participants were selected by a Steering Committee, and represented a variety of specialties from 19 departments across Brown University, University of Rhode Island, and affiliated hospitals. Participation required an institutional commitment of 20% minimum protected time to engage in research and a year-long curriculum that included biweekly didactic sessions, project development support, individual consultations, feedback on drafts, and internal study section review. Participants completed pre-, interim-, and final-assessments, which collected measures of self-efficacy, professional development needs, program satisfaction, and formative feedback. RESULTS/ANTICIPATED RESULTS: Over the first 3 years, 21 participants completed the program, 43% have received NIH or VA K/CDA awards so far, and 48% received other federal or non-federal awards. Over 25 faculty from across institutions participated in leadership and didactics, with even greater participation on mentorship teams, panels, and grant review. All cohorts showed improvements in measures of self-efficacy in grantsmanship and research and reported high satisfaction with program activities. Participants found individualized proposal feedback and internal study sections to be most valuable, and frequently cited the value of peer-learning opportunities. Challenges for scholars include mentorship challenges, competing priorities/protected time, and various external factors that impacted individual research progress. DISCUSSION/SIGNIFICANCE: The program has successfully supported cohorts of junior clinical and translational faculty from across the state in launching their independent research careers. The program may serve as a model for IDeA state inter-institutional collaboration in developing diverse faculty cohorts in the early stages of preparing their career development award.

128

Resident training in research fundamentals using an online, asynchronous course

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OBJECTIVES/GOALS: Scholarly activity is a key component of most residency programs. To establish fundamental research skills and fill gaps within training curricula, we developed an online, asynchronous set of modules to introduce trainees to various topics that

are germane to the conduct of research and evaluated its effectiveness in resident research education. METHODS/STUDY POPULATION: Research 101 was utilized by residents at the Brookdale Hospital Medical Center in Brooklyn, NY. Resident knowledge, confidence, and satisfaction were assessed using pre- and post-module surveys with 5-point Likert scaled questions, open-ended text responses, and a final quiz. RESULTS/ ANTICIPATED RESULTS: Pre-module survey results indicated that residents were most confident with the Aligning expectations, Introduction to research, and Study design and data analysis basics modules and least confident with the Submitting an Institutional Review Board (IRB) protocol at UC and Presenting your summer research modules. Post-module survey responses increased significantly compared to pre-module results for all modules and learning objectives (p<0.0001). "This module met my needs" was endorsed 91.4% of the time. A final quiz of 25 multiple choice questions resulted in a median score of 23. Content analysis of open-ended post-module survey responses identified multiple strengths and opportunities for improvement in course content and instructional methods. DISCUSSION/SIGNIFICANCE: These data demonstrate that residents can benefit from completion of Research 101, as post-module survey scores were significantly higher than pre-module survey scores for all modules and questions, and final quiz scores were high and highlighted opportunities for additional resident learning.

129

LaparoscopiX: Expanding Minimally Invasive Surgery Training in Kenya

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OBJECTIVES/GOALS: Open surgery prevails in low- and middle-income countries (LMICs) due to scarcity of laparoscopic equipment and poor access to training. LaparosopiX is a box trainer system designed for teaching hospitals in LMICs; it includes an open-source laser print design and an app to allow surgical trainees to receive feedback from laparoscopic experts. METHODS/STUDY POPULATION: This study aims to assess the usability of Laparoscopix for surgical trainees and mentors at five large teaching hospitals in Kenya. Surgical trainees and mentors who participate in this study will be observed while setting up and using the app to identify natural pain-points. A post-session survey will be conducted to assess immediate perceptions of the platform including ease of navigation and intuitive design. Over three months, aggregate data regarding platform usage at these hospital sites will be collected and analyzed to assess user retention rates, usage and traffic patterns, and skill progression over time. Surveys will be sent out to assess attitudes towards the platform and to elucidate any aspects of the system we can improve. RESULTS/ANTICIPATED RESULTS: We hope to find overall positive impressions towards the LaparoscopiX system during this study. We expect there to be some pain-points that arise during navigation of the app, but we expect no large changes to the application architecture required. We anticipate an immediate increase and eventual plateau of users recruited. We hope to see that surgical trainees are advancing through the app while gaining practice and confidence. We will gather insightful data on which aspects of the app were helpful for trainees, and which can be improved. We also hope to learn what factors may play into trainee and mentor retention in the system. DISCUSSION/SIGNIFICANCE: Through this study, we hope to elucidate ways in which we can improve the LaparoscopiX platform,

identify which features to prioritize, and determine the direction of future app development. We believe and hope that LaparoscopiX can expand access to laparoscopic surgical mentorship to improve surgical outcomes and health equity worldwide.

130

Developing a Conceptual Data Model for Nursing Workload

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OBJECTIVES/GOALS: Nurses are leaving the profession at an alarming rate due to increased workload and burnout.#_msocom_1 Computational models that are reliable and reproducible are needed to quantitatively examine nursing workload and estimate potential effect of interventions. This project developed a logical data model to represent nursing EHR interactions. METHODS/STUDY POPULATION: With nursing EHR interactions as a starting point, we expand upon literature that examined the EHR workload of physicians. We conducted an exploratory analysis of nursing EHR audit log data at a large academic medical center, and explored components of nursing workload that can be extracted from other health system data. Using concepts derived from the studying temporal biomedical data patterns, we formulated a data structure that describes nurse EHR interactions, nurse intrinsic and situational characteristics, and nurse outcomes of interest in a scalable and extensible manner. RESULTS/ANTICIPATED RESULTS: Temporal machine learning models are grounded in the concept of vectors. We developed a logical data model that describes tasks performed by nurses (NTask), nurse types (NType), and nursing outcomes (NOutcome). For each nurse (k), we define a function $<NTask\ (k, i)>$, i=1 to N as a vector of dimension N, where N is the number of time periods in the study. The i component corresponds to the activity that the nurse is doing. The model will allow the quantitative classification of activity patterns for any finite number of nurses for an arbitrary set of tasks and for time at any specified resolution. The expected outcome is a set of vectors that can then be utilized to quantitatively model nurse activity trajectories and other patterns of nurse EHR interactions. DISCUSSION/ SIGNIFICANCE: By instantiating the logical data model, we will demonstrate how nurse EHR interactions can be studied using temporal unsupervised learning and state-of-the-art artificial intelligence methods. We plan to simulate the potential impact of workload interventions and predict risk for nurse burnout.

131

Investing in Education: Design and evaluation of an innovative clinical research coordinator New Hire Education Program to strengthen clinical and translational research

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Mayo Clinic

OBJECTIVES/GOALS: The overarching goal of the Mayo Clinic in Florida Clinical Research New Hire Training Program is to create a standardized work force development model that ensures all new research coordinators receive the same high-quality training and