

team member using a standard data collection tool. We also recorded documented events in the electronic medical record (EMR). Paired t-tests were performed for continuous data and McNemar's test for categorical data. RESULTS/ANTICIPATED RESULTS: In total, 50 patients were enrolled between February and April 2023. The nurses reported that patients participated in a median of 5 mobilizations (Interquartile range [IQR] 4-6) in a 12-hour shift, whereas nurses documented in the EMR that patients participated in a median of 1 mobilization (IQR 0-3;  $P < 0.001$ ). On direct query, the nurses stated that a total of 8 individual safety events occurred during mobility, representing a 3% (8/259) safety event rate. In the EMR, the nurses documented 1 individual safety event during mobility, representing a 1% (1/84) safety event rate ( $P = 0.008$ ). Nurses reported that they mobilized 50% (25/50) of the patients out of bed; however, they documented that they mobilized only 32% (16/50) of the patients out of bed ( $P = 0.007$ ). DISCUSSION/SIGNIFICANCE: Compared to EMR documentation, nurses report more mobilization of critically ill children during the day, including more out of bed mobilization and safety events. Future nurse education should focus on mobility documentation to ensure that it reflects mobility at the bedside to facilitate process improvement and optimize care for PICU patients.

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### Applying the Competency Index for Clinical Research Professionals (CICRP) for Educational Program Evaluation

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OBJECTIVES/GOALS: To demonstrate the value of the Competency Index for Clinical Research Professional (CICRP) as a tool in program evaluation using a pre- and post- design to evaluate student perceived self-efficacy in clinical trial competencies at program entry and at program completion. METHODS/STUDY POPULATION: Using a separate-sample pre-post study design, we administered the CICRP questionnaire to students in the entry and exit courses of the Master of Clinical Research (MCR) Program during the 2021-2022 academic year, using Qualtrics™ (Provo, Utah) survey instrument for use on desktop or mobile device. We included the 20 CICRP competency items asking students to rate their self-efficacy in performing each item using a Likert Scale (from 0-10) (0=not at all confident; 10= extremely confident). Links to the survey were included in the courses for the foundational entry course and for the final culminating project course. RESULTS/ANTICIPATED RESULTS: Overall, 54 students took the CICRP during the entry course and 56 during the exit. Cronbach's alpha for each assessment ranged from 0.93 to 0.98. Both the Welch's two-sample t-test and Wilcoxon rank-sum test show very significant differences between the group of students entering the program and leaving the program ( $p$  value  $< 0.001$ ). A significant increase in mean CICRP total score is seen at each experience level between program entry and program exit ( $p < 0.001$ ). A linear regression, adjusting for available covariates, individuals taking the exit course have a mean CICRP total score 92.690 ( $p$  value  $< 0.001$ ) higher than individuals taking the entry course. DISCUSSION/SIGNIFICANCE: Competency indices have been used to measure self-efficacy in translational research scientists, thus the use of CICRP to measure self-efficacy can be useful in assessing whether our competency-based program is meeting the JTF Competency needs of students.

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### Academic Innovation through the interdisciplinary (elective) course Introduction to Clinical and Translational Research (CTR) to increase the number of undergraduate students in Puerto Rico with the knowledge, skills, abilities, and opportunities in CTR

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OBJECTIVES/GOALS: The Title V project team is offering an elective course to teach the historical development of CTR, make a compelling scientific presentation, and use bibliographic databases. In addition, students learn: to write the research question, design a career development plan, protect human subjects in research, and the mentor-mentee relationship. METHODS/STUDY POPULATION: The course includes a variety of educational strategies and activities that allow the student to increase their knowledge and initiate their interest in the field of CTR. Both academic semesters (August to December and January to May) are offered remotely in two-hour synchronous sessions on Fridays from 3:00 p.m. to 5:00 p.m. through videoconferences, in addition to asynchronous activities. Invited expert lecturers and faculty reinforce the course content in each topic they address. In addition, course coordinators assign guided tasks where the students perform the work. Then, they present or send their work to the course coordinators for evaluation. RESULTS/ANTICIPATED RESULTS: The course began in January 2020 and has had six offerings, including one in the current academic semester (August to December 2023). Its first offering was in the semester from January to May, and due to the interest generated in students in August 2022, it is now available in both semesters. From its beginning to the present, the course has included students from the University of Puerto Rico (UPR) Bayamon, Cayey, Humacao, Mayagüez, and Rio Piedras campuses, impacting all geographic areas of Puerto Rico. The course has also represented an opportunity for graduate faculty to teach CTR to undergraduate students. Until 2023, 56 students have enrolled. DISCUSSION/SIGNIFICANCE: Upon completing six-course offerings, the evaluation carried out by the students demonstrates satisfaction with the learning obtained. The knowledge and skills achieved have led them to participate in CTR with the mentoring of collaborating course professors and starting a new professional development opportunity for undergraduate students.

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### Impact of Undergraduate Clinical Research Experience: Highlighting the UCLA Clinical and Translational Science Institute Research Associates Program (CTSI-RAP)<sup>†</sup>

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OBJECTIVES/GOALS: CTSI-RAP is a professional development program that provides undergraduate students with clinical research exposure and training. Students support UCLA research faculty by assisting with all aspects of the research process, including recruiting participants, data management, and presentations. METHODS/STUDY POPULATION: CTSI-RAP onboards a 15-20 volunteer student cohort annually in a competitive application and interview process with less than a 10% acceptance rate. Since the inaugural

assisting with all aspects of the research process, including recruiting participants, data management, and presentations. **METHODS/STUDY POPULATION:** CTSI-RAP onboards a 15-20 volunteer student cohort annually in a competitive application and interview process with less than a 10% acceptance rate. Since the inaugural cohort in 2013, over 160 students have participated. The program engages hundreds of students each year through the recruitment process, campus clinical research events, and student-led conference opportunities. Evaluation surveys developed through REDCap in 2022 sought to assess the program's impact on undergraduate experiences, professional development, and post-graduate careers. Surveys distributed to investigators and their study teams evaluated the student's clinical research knowledge and engaged student involvement. **RESULTS/ANTICIPATED RESULTS:** Based on evaluation surveys, the CTSI-RAP program received excellent reviews from both students and their assigned study teams. 100% of students and faculty would recommend the program to a friend or colleague. 30% of students present or publish annually, indicating a wealth of meaningful contributions made by students. 90% of students go on to attend medical school, health-related graduate school, or other health-related employment. Several students continue working in clinical research through gap-year employment. As demonstrated by the high caliber of student and faculty experiences, CTSI-RAP has created an esteemed and valued symbiotic infrastructure to support clinical research endeavors at UCLA. **DISCUSSION/SIGNIFICANCE:** Through clinical research career exploration and professional skill-building in undergraduate careers, the CTSI-RAP program produces highly-trained future leaders in the field and benefits the capacity of UCLA research. CTSI-RAP provides a model for similar programs to be funded and implemented in other institutions.

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### Impacting Clinical Research Nurses' Intent to Stay Through Mentoring

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**OBJECTIVES/GOALS:** Clinical Issue/ Practice Problem: A high turnover rate for research nurses was identified between 2017-2022 in the clinical research center at an urban Midwest academic health center. Inexperienced staff and high turnover are barriers to maintaining high-quality research integrity, efficacy, and safety for research projects and participants. **METHODS/STUDY POPULATION:** Project Implementation: A formal mentorship program was developed based on a curriculum from the International Association of Clinical Research Nursing Scope and Standards of Practice. The six-week project was implemented for research nurses with less than 2 years of experience. Mentees were paired with senior research nurses and met one-on-one weekly. Mentees completed the Anticipated Turnover Scale (ATS) survey in week 1 and week 6. All program participants completed a final evaluation survey. **RESULTS/ANTICIPATED RESULTS:** Outcomes: There was a one-point average reduction in pre- and post-ATS survey scores. This result supports the theory that mentees were less likely to leave their research role after a formal mentorship program. Qualitative results from the final evaluation survey demonstrate the program had a positive impact and benefits for both the mentees and the mentors. **DISCUSSION/SIGNIFICANCE:** Clinical Implications: By decreasing turnover rates, a highly competent and knowledgeable

research nursing staff is attained to ensure appropriate nursing action and safety profiles for novel therapies.

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### Evaluating the impact of the Translational Research Program at the University of Toronto

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**OBJECTIVES/GOALS:** There is a need to develop a workforce of translational research professionals with the skills to innovate, mobilize, and commercialize research for unmet needs in the Canadian health system. The objective of this study is to evaluate the impact and value of the master's degree on the Translational Research Program (TRP) alumni. **METHODS/STUDY POPULATION:** This study will use a cross-sectional approach and an electronic survey will be administered to alumni. The TRP was established in 2015 and has graduated over 150 students since its inception. Participants will be recruited through convenience sampling via email, social media platforms, and personal communication. Eligible participants must have a conferred Master of Health Science in Translational Research from the University of Toronto. All collected data will remain anonymous and include demographic information about graduation year, race, ethnicity, gender, and employment status. Descriptive statistics will be used to analyze and report the findings. **RESULTS/ANTICIPATED RESULTS:** The results of this survey will be used to evaluate how the TRP graduate degree helps alumni contribute to healthcare, learn to think differently, and establish their professional networks. The findings will also be used to inform curriculum improvements, enhance competency-based assessments, and understand demographic differences in student cohorts to promote equity, diversity, and inclusion. Investigating the perspectives of alumni reflecting on their degree will support validating the program's objectives and advance the integration of translational science principles in the healthcare workforce and community. **DISCUSSION/SIGNIFICANCE:** This research addresses the need to evaluate health sciences education to ensure the program's novel pedagogical approaches are equipping the next generation of health professionals with the skills to accelerate the transformation of discoveries into interventions that benefit human health, improve clinical medicine, and enhance patient care.

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### Utilizing Project ECHO to mitigate environmental impacts on health through collaborative provider education

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**OBJECTIVES/GOALS:** Launch a case-based learning collaborative on best practices that meet social, emotional and physical health needs of underserved communities as they relate to environmental toxins—specifically those related to the train derailment in OH. Topics discussed could also include disasters and spills, air quality, extreme heat, and water. **METHODS/STUDY POPULATION:** In response to a call for action delivered by PA's Acting Secretary of