

ported from the previous version of the platform. **DISCUSSION/SIGNIFICANCE:** Results from this evaluation will suggest strategies to enhance engagement in current courses and identify opportunities for future course development. Increasing engagement in self-paced CTR education is an important complement to formal workforce development and training programs.

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### **Effectiveness of an Academic Medical Center Clinical Research Coordinator Intern Program on Learning and Workforce Expansion**

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**OBJECTIVES/GOALS:** The Clinical Research Coordinator (CRC) Intern Program was developed to increase knowledge and awareness of CRC's vital role in conducting clinical studies. Program outcomes are to provide students with marketable skills and knowledge leading to employment within the clinical research ecosystem. **METHODS/STUDY POPULATION:** The CRC Intern Program is available to college students for health-related academic courses requiring an internship component. Didactic and experiential learning are incorporated into the program with students imbedded within well-established clinical research teams. Activities include attending IRB meetings, recruitment and enrollment, data collection and entry, and regulatory items. Students complete knowledge pre- and post-assessments (Competency Index for Clinical Research Professionals-CIRCP) via REDCap surveys to assess learner knowledge acquisition and program effectiveness. Demographic, program evaluation, and 3-month follow up survey data are analyzed using descriptive statistics. **RESULTS/ANTICIPATED RESULTS:** Beginning in Spring 2022, the Intern Program has accepted 9 students with 5 completing the program, with 2 of this 5 having been offered employment as CRCs. Preliminary CIRCP assessment data indicates increased CRC knowledge upon Intern Program completion. Demographic data shows that students are mostly female and non-white (43% African American, 29% Hispanic). Additional results from the current cohort will be shared upon program completion. Of note is the development of partnerships with local colleges, including community colleges, to build awareness of the CRC career path and to provide opportunities for CRC exploration resulting in expansion and diversification of the clinical research workforce. **DISCUSSION/SIGNIFICANCE:** There is an industry wide shortage of CRCs. Our internship program has provided an effective method to expand and diversify the CRC workforce through knowledge acquisition and application building CRC skills and competencies. Lessons learned and future plans for intern expansion will be discussed.

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### **Empowering the Next Generation of Clinical & Translational Scientists**

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**OBJECTIVES/GOALS:** Biomedical research fields are facing the challenges of demand for skilled workers as well as challenges related to diversity in that workforce. It is important that the healthcare workforce reflect the population it serves. The Exposures

Internship seeks to address this by building pathways for youth to pursue careers in research and medicine. **METHODS/STUDY POPULATION:** In 2021, the Yale Cultural Ambassadors expressed concern about the lack of free high quality, educational offerings for youth that summer. They asked YCCI to consider developing a summer program for students aged 15 and older that focused on spurring interest in careers in healthcare, medicine, and clinical and translational research. The result was a 4-week virtual learning experience for 34 interns who met daily via Zoom and participated in course work, lectures, journal clubs, group projects, and virtual lunches with internationally renowned clinical research and healthcare leaders. Sessions were designed to help interns gain knowledge of and exposure to current topics in clinical and translational science and to observe the various steps of proposing, designing, undertaking, and analyzing clinical trials. **RESULTS/ANTICIPATED RESULTS:** YCCI received over 900 inquiries from around the world with more than 200 completed applications for participation in the internship for the pilot year. Since then, YCCI leadership has worked with community partners to engage young scholars from 17 different states, Canada, Mexico and Puerto Rico. Of those, we estimate 75% are minority, ~50% female and 20% from rural areas with limited similar opportunities. During the four weeks of the program these highly motivated students worked on projects aimed at increasing participation in pediatric research through a revised Informed consent and adolescent assent process and a youth centered awareness campaign. Interns were so inspired that they requested the program be continued beyond the initial four weeks. As such, YCCI continued to offer sessions throughout the year. **DISCUSSION/SIGNIFICANCE:** In evaluation of the pilot program 95% of respondents strongly agreed that the program exposed them to new information about clinical and translational research. One intern shared, This program has unquestionably made me consider becoming a researcher in the future with the goal of becoming a principal investigator within my interest in medicine.

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### **Evaluation of a grant writing workshop designed to increase submission and award rates for career development awards**

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**OBJECTIVES/GOALS:** To improve early career faculty members' NIH grant writing skills, Clinical and Translational Science Awards (CTSA) hubs have developed a variety of workshop-style programs. However, few articles have evaluated the impact of grant writing workshops on NIH grant submission and award rates. **METHODS/STUDY POPULATION:** The K Writing program was developed by the Michigan Institute for Clinical and Health Research (MICHR) at the University of Michigan. Since 2012, 435 scholars have participated in the program. The MICHR K Writing program is a three-part workshop series that prepares scholars by providing them with guidelines to write all sections of a career development grant application. Each session focuses on different sections of the K award proposal. During the workshop sessions, participants break into small groups and exchange drafts of their proposal sections and receive peer critique and feedback from senior faculty facilitators who have experience with NIH study sections. **RESULTS/ANTICIPATED RESULTS:** Between 2012-2018, 273 scholars participated and 57% were female. Our two primary outcomes of

interest are submission rates and success rates (the number of grants awarded divided by the number of applications). We plan to examine the effects of several characteristics, including number of sessions attended, cohort year, and faculty vs. postdoctoral status. We will also examine whether there were differences in submission and success rates between female and male researchers and between underrepresented minority scholars and those who identified as white or Asian. Lastly, we will report submission and success rates for each grant mechanism and compare them to the national averages. **DISCUSSION/SIGNIFICANCE:** Obtaining external research funding is an important part of a faculty career, especially at its early stages. This research has important implications for the design of similar programs intended to increase submission and success rates for federal grant applications.

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### Evaluation of a Simulation Curriculum to Improve Nursing-Led Early Physical Rehabilitation of Critically Ill Children

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**OBJECTIVES/GOALS:** Early pediatric intensive care unit (PICU) mobilization is safe and associated with improved outcomes. Nursing-specific mobility training is desired and improves mobilization compliance. Thus, our aim is to implement a nurse-targeted, simulation-based early mobility curriculum to determine if it increases the frequency of PICU mobilizations. **METHODS/STUDY POPULATION:** We will conduct a single center pre-post interventional study of an in situ nurse-targeted, simulation-based early mobility curriculum. We will prospectively evaluate mobilization events in 100 patients admitted during the pre-intervention phase (n=50) and the post-intervention phase (n=50). Inclusion criteria are children ages 1 day to 17 years old admitted to the PICU for ≥3 days. Exclusion criteria include specific mobility contraindications. PICU-wide deployment will be complete when >80% of nurses have participated in the curriculum. Demographic and clinical information will be obtained. Mobility data obtained will include number of nursing-led mobilizations, highest level of mobility achieved, and potential safety events. Data will be collected from the EMR and the nurse caring for the patient. **RESULTS/ANTICIPATED RESULTS:** The primary endpoint will be the change in the number of nursing-led mobilization events per patient day. The secondary effectiveness outcome is the highest level of mobility achieved by patients during mobilization events in a day. A final secondary end point will be safety events defined as unplanned extubations, medical device dislodgement, falls, and cardiac arrests. Descriptive statistics for continuous variables will be presented as the median and interquartile range and categorical variables will be expressed as percentages. The effect of the simulation curriculum on the clinical outcomes will be assessed using mixed-effects models. Due to the lack of normality in number of nurse-led mobilizations and highest level of mobility achieved, the analysis will be performed using log-normal models. **DISCUSSION/SIGNIFICANCE:** We hypothesize that we will demonstrate the crucial importance of hands-on nursing education to improve and increase early mobility of critically ill children

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### Evidence to impact: Developing a workforce of translational research professionals

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**OBJECTIVES/GOALS:** The goal of the Translational Research Program (TRP) at the University of Toronto is to provide structured and adaptive competency-based training around the translation, mobilization, implementation, and commercialization of research for the current and future Canadian healthcare workforce. **METHODS/STUDY POPULATION:** Guided by the Toronto Translational Framework, the TRP is a two-year hybrid master's degree program that integrates courses, case-studies, mentorship, and experiential learning to facilitate real-world student-led translational projects. Focusing on skills development and competency-based assessment, the curriculum emphasizes ongoing reflection, interprofessional collaboration, and multidisciplinary problem-solving using human-centered principles. Learners identify problems using contextual inquiry to define unmet needs and frame design requirements. Systematic ideation is used to generate, select, and validate promising concepts for further iterative prototyping and evaluation. **RESULTS/ANTICIPATED RESULTS:** Throughout the program, students demonstrate a range of collaborative skills and activities around developing, assessing, and implementing new health interventions. Learners apply the Toronto Translational Framework and refine their professional competencies during the final year of the program in a student-led Capstone project. The unconventional combination of a guided framework and a learner-driven curriculum has produced over 120 graduates in a variety of careers within government, industry, clinical settings, and start-ups. The program's focus on problem-solving and lifelong learning is growing Canada's translational workforce and advancing translational health science education. **DISCUSSION/SIGNIFICANCE:** The TRP addresses the need to educate healthcare professionals in Canada about translational research and accelerate the transformation of scientific discoveries into tangible interventions that benefit human health, improve clinical medicine, and enhance patient care.

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### Factors Associated with Confidence in Career Progression among Underrepresented Post-doctoral Fellows and Early-career Faculty

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**OBJECTIVES/GOALS:** Underrepresented (UR) biomedical researchers leave research positions at a disproportionate rate. We