

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

Health, we established a partnership between Penn State CTSI, Project ECHO at Penn State, and Primary Health Network (PHN). PHN is the largest Federally Qualified Health Center in PA, making it uniquely qualified to reach rural providers diagnosing and treating patients impacted by environmental events. Utilizing the ECHO model, we are hosting monthly, 1-hour sessions on environmental determinants of health starting October 2023. Experts in pulmonology, toxicology, atmospheric science, and rural medicine (whom many participants would have limited access to outside of the ECHO platform) and participants have the opportunity to share and learn from their varied experiences exemplifying a culture of 'all teach, all learn'. RESULTS/ANTICIPATED RESULTS: Project ECHO is an ideal model for upscaling workforce quickly, allowing participants to be responsive in the care of their community, regardless of location and access to specialty clinics. 74 participants across 26 PA counties registered for the series, ranging from PCPs, medical directors, and state officials. Upon registration, nearly half of our direct patient-care participants do not routinely conduct an environmental exposure history and almost 70% report receiving questions from their patients related to how the environment might impact their health. More than half of those providers reported feeling unprepared to answer patients' questions related to the environment's impact on their health. Evaluation data will be collected at enrollment, after each session, and post-series. DISCUSSION/SIGNIFICANCE: This series could result in: \* Reduction of health disparities caused by environmental events (no cost, virtual learning) \* Increased preparedness to quickly address health questions/symptoms related to environmental exposures \* Increased awareness of the environmental impacts on health. \* Improved testing/treatment for patients

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### **An educational curriculum, mentors' preparedness and certification, a mentored research experience and a support network: strategies to increase diversity and inclusion in the Clinical and Translational Research (CTR) workforce among underrepresented researchers.**

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OBJECTIVES/GOALS: The Professional Development Core (PDC) of the Hispanic Alliance for Clinical and Translational Research (The Alliance) has implemented a multifaceted program to support Early-Stage Investigators (ESI) and mid-career investigators to increase productivity and achieve success in their research endeavors. METHODS/STUDY POPULATION: Since 2021, PDC launched an educational program tailored for ESI or mid-career investigators, addressing specific gaps in research competencies. A needs assessment survey gathered information from these investigators, and its results served as the foundation for the program's design. In addition, recognizing the need for excellence in mentoring, PDC spearheaded a program to provide a certification curriculum for new or experienced mentors. Experienced researchers were encouraged to participate in the certification process with ample opportunities to discuss their mentoring experiences and the incorporation of new approaches that emphasize diversity and inclusion. A structured mentored research experience with support for protected time for the investigator and the mentors was also implemented. RESULTS/ANTICIPATED

RESULTS: Four investigators and their mentors have received the Mentor-Mentee Award (100% PhD, 75% female, 50% Assistant Professor, 75% ESI, 75% with mentors from the mainland United States). Their program's evaluation will be presented. Thirty-two (32) researchers have participated in the courses in Health Disparity and Scientific Communication. Support for grant writing was offered through a three-pronged approach: a webinar series, a course in Grantsmanship and a grant's bootcamp. Twenty-four (24) mentors were certified, and over 30 training activities were offered to supply knowledge in areas previously identified in the needs assessment. We will present the complete curriculum, courses offerings, participants' profiles, and productivity outcomes. DISCUSSION/SIGNIFICANCE: Alliance educational and mentoring supportive network increased the diversity of CTR workforce and prepared qualified researchers to address the Hispanics health needs. Collaborations with mainland researchers have expanded the PDC program's reach and contributed to the enhancement of the Hispanic contribution to the health research ecosystem.

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### **Insights from a Process Improvement Co-op in the Development of an Informed Consent Professional Certificate (ICPC) Course**

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OBJECTIVES/GOALS: The objectives of the ICPC Course were 1) to define elements needed to 'build' a solid framework for the creation of an effective informed consent document; 2) to examine various regulatory references and their importance in the context of the informed consent process; and 3) to review helpful tips and best practices of the informed consent process. METHODS/STUDY POPULATION: This 7-week course was a multi-disciplinary effort by the Miami CTSI, the Regulatory and Monitoring Support Office and the Human Subjects Research Office (HSRO), as part of their co-op partnership. The CTSI's Network of Clinical Research Professionals (NCRP) (over 1995 members and established to offer and enhance education, training, and overall career development and networking for the U's diverse research workforce) served as the target audience. The lead HSRO official was the course content developer and served as instructor. The Director of the HSRO served as the certificate & program coordinator. Additionally, this course indirectly fulfilled part of the requirements of the Institution's AAHRPP re-accreditation. RESULTS/ANTICIPATED RESULTS: 70 persons attended all sessions and received their certificate. A post-course survey was deployed (n=70). 69 respondents were extremely satisfied with course content; 67 were likely to recommend the course to a colleague. Feedback highlights include: appreciation for time taken to organize/offer the course; presenter knowledge and preparation; and that case studies/examples were up-to-date and applicable. As an added incentive to participate in the course, both the School of Nursing and the Medical School provided CEU credits and the Society of Clinical Research Associates (SOCRA) accepted documentation of candidate participation in continuing education programs for recertification. DISCUSSION/SIGNIFICANCE: Based on a need identified through a multi-disciplinary process, a successful Informed Consent Professional Certificate Course was created and implemented. Respondents indicate extremely high satisfaction with