

electronic health record (EHR) databases to develop and answer research questions. Medical students were trained in capabilities of traversing the large RWE-EHR so they may query, extract, and analyze data as well as refine their research questions. **METHODS/STUDY POPULATION:** Ten medical students and 9 non-data scientist mentors underwent training in how to use the IU School of Medicine-Evansville RWEdataLab (CRC/Sidus Insights) national real-world cardiology and psychiatry deidentified EHR databases. The program began with students attending introductory training teaching database, spreadsheet, and statistical program usage. During the remainder of the program, a weekly best practices meeting took place among mentors and a weekly cohort meeting of students and mentors discussed student presented findings. At the end of the program, students generated abstracts and poster or podium presentations to share their findings at local symposia. A survey was also distributed to students to assess the impact of the tools, trainings, and program. **RESULTS/ANTICIPATED RESULTS:** All students were able to define a question of interest, query and extract data related to their research question, and analyze multiple aspects of their data. Projects were well received at local symposia, with 2 receiving special honors, and 2 projects have been presented at regional/national conferences. Students rated the program highly and were likely to recommend the program to other students. They self-rated improvements in asking scientific questions, using excel, data presentations, and problem-solving. Students valued weekly “check-in” meetings and interactions with mentors more than lectures or technical “help desk” support. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The program provides mechanisms for non-data scientists and medical trainees, to learn and access RWE-EHR databases to address research questions. The cohort interactions fostered discussion among mentors and students promoting research question refinement and clarity findings. The program also introduces a new tool for potential patient care.

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### Engaging research professionals in organizational culture and climate initiatives

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**OBJECTIVES/GOALS:** Engage the research professional (RP) workforce in assessing job satisfaction, motivators, barriers, and levels of support throughout the research enterprise. The goal of this collaboration is to foster a positive culture, inform manager training, ensure RP retention, and enhance career mobility pathways. **METHODS/STUDY POPULATION:** Methods include a HR data compilation/analysis and focus groups for new RP's (RESULTS/ANTICIPATED RESULTS: This initiative will articulate the current culture and climate of the research enterprise and identify key strategic areas for growth. The UMN Clinical and Translational Science Institute (CTSI) will build off the design of an internal survey at Vanderbilt (2018) to encompass organization-specific challenges, the post-pandemic research landscape, and the UMass Diversity Engagement Survey. This process will also generate specific insights including RP sentiment statements, trends in how RP's describe their day-to-day work, assessment of barriers, analysis of retention benchmarks, and defining employee hopes/motivators. The CTSI will also identify salient RP growth opportunities, leadership competencies,

and areas of non-monetary compensation to improve satisfaction and career mobility. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Targeted interventions will be developed to address RP satisfaction barriers and leverage opportunities for KPI improvement. Results will be disseminated to managers, administrators, and the CTSI network. Resource development will include RP personas, job description/hiring templates, and strategic guides for key operational challenges.

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### Creating a larger, more inclusive cohort to promote scholar engagement through the addition of an invited KL2 seminar fellows program

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**OBJECTIVES/GOALS:** The ITHS KL2 Seminar Fellows program creates a larger cohort by inviting additional early career faculty to join the tailored career development curriculum. The implementation of this program seeks to increase collaboration and innovation by amplifying diverse perspectives and increased networking. **METHODS/STUDY POPULATION:** In addition to the funded KL2 Scholars awarded each year, 13–15 Seminar Fellows are invited to be full participants in the KL2 curriculum, which includes monthly career development seminars and opportunities for feedback on their research. Invited Fellows are early career investigators who were promising KL2 applicants, faculty with alternative career development funding, and/or new underrepresented faculty in Washington, Wyoming, Alaska, Montana, and Idaho. Fellows commit to one year of participation, which can be renewed on a case-by-case basis. Fellows have been integrated into the ITHS implementation of Flight Tracker (Vanderbilt) to follow the career pathways alongside funded KL2 award recipients. **RESULTS/ANTICIPATED RESULTS:** The key measures of success will be the rate of seminar fellows transitioning into K-level or similar career development awards and securing other subsequent funding. Preliminary data demonstrates significant collaborations between KL2 Scholars with different areas of scientific inquiry and promotion of at least half of our past KL2 Scholars into leadership positions at prestigious medical schools in the USA and Canada. We suspect that the trends evidenced by the career progression of early KL2 recipients will be expanded into newer and different translational research projects with the addition of the KL2 Fellows program. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The Seminar Fellows program presents a cost-effective way to increase the impact of an existing career development program by amplifying cross-boundary interactions to form a strong, diverse translational research workforce.

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### Empowering researchers for community collaboration

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**OBJECTIVES/GOALS:** We developed an educational online module to equip researchers with knowledge, skills, and resources for conducting community-engaged research, aiming to foster meaningful collaboration between academia and communities. **METHODS/STUDY POPULATION:** A working group was formed, including three research faculty, four staff members, and four community partners who have partnered with researchers on community engaged projects. The working group first identified three objectives for the module and outlined what should be covered for each objective. The working group identified existing resources, texts, and videos that would address the objectives and worked in small groups to create additional content for the module. A smaller subgroup then took this content, organized it, and worked with the Office of Online Education to put the content into an interactive online format. **RESULTS/ANTICIPATED RESULTS:** The three objectives identified for the online module are 1) Describe community engaged research, the purpose it serves, and why researchers do it; 2) Identify how to seek and collaboratively engage with a community partner; and 3) Identify and connect with resources for conducting community engaged research in Indiana. Each objective contains text, interactive figures and images, links to external resources or further reading, and videos of researchers and community partners talking about their own experiences and lessons learned. Each objective also includes activities and prompts for the learner to complete to apply the module content to the work they want to do. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Community engagement ensures research addresses real-world needs, builds trust, and includes diverse perspectives. Many researchers lack best practices to do this ethically. This module teaches skills needed to foster trust through transparency, respect, and by incorporating community voices.

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### **Advancing medical innovation: The Innovation Fellows Program for training early-career scientists**

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**OBJECTIVES/GOALS:** Goals for this work include identifying areas for continuous curricular improvement as well as documenting best practices in multidimensional mentoring in innovation. Programmatic goals include pivoting early career scientists toward translational science solutions that are commercially viable. **METHODS/STUDY POPULATION:** Using Likert-scaled perception surveys of fellowship participants, preliminary pre- and post-fellowship responses are presented. Preliminary regression analyses are used to identify trends in participants' ratings across innovation pathways and customer-focused design. **RESULTS/ANTICIPATED RESULTS:** Focusing on the initial cohort of fellows' perceptions of their competencies in the areas of technology propositions and industry networking, we observed a near twofold improvement reported competency, suggesting a key strength area for the Fellowship program. **DISCUSSION/SIGNIFICANCE OF IMPACT:** First of its kind at Penn State College of Medicine, the Center for Medical Innovation's partnership with Clinical and Translational Science Institute signals enhanced commitment to

developing early career fundamental scientists in the areas of intellectual property, customer-focused design, and commercialization. Significance of this work includes capturing best practices.

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### **Unlocking potential: Introducing the PI Badge, a micro-credential for clinical trial investigators**

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**OBJECTIVES/GOALS:** Competencies of a principal investigator (PI) in clinical research are crucial for ensuring the success, integrity, and ethical conduct of a study. This protocol aims to assess training offerings focused on improving clinical investigator competency and build a set of best practices for training. **METHODS/STUDY POPULATION:** The authors have started by creating a committed group of key opinion leaders at Rutgers Health and across industry to advise on the process. A mixed-method assessment of the current state of clinical investigator training/education in the conduct of T1-T4 clinical trials is currently being conducted to identify existing practices. An evaluation and assessment of key competencies will be initiated. Education and training objectives and modules will subsequently be developed from this process. The program will be piloted to early career clinicians, faculty, fellows, investigators within NJACTS, and other CTSA's and later assessed for efficacy. **RESULTS/ANTICIPATED RESULTS:** A summary and descriptive statistics of the landscape of training opportunities and the variabilities of these offerings to address the needs of these investigators is projected to exhibit the gaps in knowledge and skill set required for a PI to effectively conduct a clinical trial. This will serve as the basis for developing a micro-credential (PI Badge) by the NJACTS' Workforce Development group. Variability across educational offerings from academic institutions, sponsor/CRO protocol/study training, and online courses may not foster applicable skills. This badge is focused on addressing a clinician's understanding of the roles and responsibilities as they align to the Principal Investigator commitments listed in the FDA form 1572. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Whether or not micro credentialing will enhance principal investigator competency, this mixed-method assessment is poised to identify a common benchmark for success. The ability to deal with increasing protocol complexity requires investigators to be more adept at implementation and compliance to sustain their ability to conduct clinical trials.

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### **Deconstructing the institutional data Maze to Develop CRP Employment Data Reporting and Evaluation**

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**OBJECTIVES/GOALS:** Obtaining reliable clinical research professional (CRP) employment data within and across Clinical and Translational Science Awards (CTSA) institutions is an ongoing challenge. We describe an intra-institutional approach implemented to generate routine and accurate CRP data reports to monitor and evaluate CRP career progression and assist in formation of an institutional CRP network. **METHODS/STUDY POPULATION:** A