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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 CTSAs 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

https://doi.org/10.1017/cts.2024.857 Published online by Cambridge University Press

research job family with 47 job series including human, animal, and laboratory research positions was implemented at Virginia Commonwealth University (VCU). However, CRP job satisfaction surveys and evaluations could not be confidently interpreted due to the confounding animal and laboratory research positions. Led by VCU Clinical and Translational Science Awards Workforce Development a cross-functional team was formed to isolate specific CRP positions. The team included CRP front-line staff and managers partnering with VCU Human Resource Information Systems. Identified were 39 unique CRP positions across 13 distinct job series. This identification provides CRP new hire and job specific data for evaluation and tracking as well as the ability for CRP directed communications. RESULTS/ANTICIPATED RESULTS: Initial and monthly HR data reports were used to develop an institutional CRP list-serv for 325–350 allowing for targeted CRP communications within a decentralized environment. Bimonthly HR data reports identify university new hires and internal transfers into any of the 39 unique jobs within 0 – 12 days of hire. Twelve unique data points are provided (name, email, current position hire date, job code, job title, working title, department, division, supervisor's name, job title, email, and job code) allowing for tracking and analysis of retention rates, career progression, and lateral movement among other outcomes. Collaboration led by VCU Clinical and Translational Science Awards Workforce Development team provides the representative CRP staff, managers, and institutional leadership with a renewed confidence interpreting CRP employment data. DISCUSSION/SIGNIFICANCE OF IMPACT: The team science approach to identify and develop routine and real-time reporting of CRP job specific data provides a rich source of information. The information is used to evaluate CRP job satisfaction and factors contributing to CRP retention, engage in future mixed-methods research, and support the formation of an institutional CRP network.

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Wake Forest CTSI Translation Research Academy (TRA): Delivering an Academic Learning Health System (aLHS)-Oriented Curriculum to K12 Scholars and Early-Career Research Faculty

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OBJECTIVES/GOALS: The Wake Forest Clinical and Translational Science Institute (CTSI) has integrated academic goals of T0-T4 translation, scholarship, and education into our Academic Learning Health System (aLHS) framework. Our Translation Research Academy (TRA) provides rigorous training for outstanding and diverse K12 and early-career faculty to develop LHS core competencies. METHODS/STUDY POPULATION: The TRA Forum is the main vehicle for delivering an aLHS-oriented curriculum. Currently, the program includes six K12 scholars and 18 other early-career research faculty with facilitated access to CTSI resources. The TRA Forum is a 2-year seminar series that meets twice a month to discuss topics relevant to the aLHS, leadership, and career development. Inclusion of first- and second-year scholars facilitates peer mentorship, allowing Year 2 scholars to share insights with new scholars. Forum sessions are developed around adult learning theory: Each participant is asked to contribute their experience to discussions, and sessions focus on real-world examples. RESULTS/ANTICIPATED RESULTS: Scholar and faculty commitment is very high. For the first 30 min., scholars present their work in small groups. This extends the range of disciplines exposed (64% of TRA graduates found this very helpful) and promotes translational traits of boundary crosser, team player, and systems thinker. Participants view the TRA as an opportunity to form internal peer networks, promote peer mentoring, and establish new collaborations. The remaining 60 minutes are used for education. Sessions include nominated topics and those providing a solid foundation in core aLHS competencies and characteristics of translational scientists. Educational sessions (97%) were rated as helpful or very helpful. DISCUSSION/SIGNIFICANCE OF IMPACT: TRA scholars receive rigorous training in a highly supportive environment to produce aLHS researchers with skills to transcend boundaries, innovate systems, create new knowledge, and rigorously evaluate results.

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Implementation of a clinical and translational research pathway for medical students at six sites across Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI) regions

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OBJECTIVES/GOALS: The Clinical and Translational Research (CTR) pathway aims to increase the number of health science professionals participating in CTR in their careers throughout the WWAMI Region (Washington, Wyoming, Alaska, Montana, and Idaho). METHODS/STUDY POPULATION: The first cohort of thirty-one students started in January 2024 and were organized into three groups that met weekly. One in-person group of students in Anchorage, AK; one in-person group in Seattle, WA; and a group of students from across the WWAMI region convened virtually. Students completed a year-long series of elective courses addressing fundamental concepts of designing, conducting, and presenting the results of a research project. Over the summer between year 1 and year 2 of medical school, students dedicated 8 weeks to full-time research activities under the supervision of their research project mentor. In Fall 2024, students prepared and presented research posters at regional poster sessions and abstracts and oral presentations for submission to the Western Medical Research Conference in January 2025. RESULTS/ANTICIPATED RESULTS: The ultimate goal of the CTR pathway is to increase the number of medical providers across the WWAMI region with significant awareness, interest, and experience in research. Many students hesitate to engage in research due to a perceived lack of necessary skills. The CTR pathway addresses this gap by equipping students with the research competencies needed to participate confidently in scientific inquiry. Feedback from the inaugural cohort has been overwhelmingly positive, with many students highlighting how the CTR pathway enhanced their confidence and knowledge, empowering them to execute their proposed research projects successfully. Our second cohort of students joined the CTR pathway in January 2025. DISCUSSION/SIGNIFICANCE OF IMPACT: The CTR pathway positions early medical students to engage in research more deeply during their medical training and prepares them to seek additional training opportunities toward a career in research. The majority of students in the first cohort were located at regional sites and many have interest in practicing in rural or underserved areas.

https://doi.org/10.1017/cts.2024.857 Published online by Cambridge University Press