Enhancing the clinical and translational enterprise through research staff development
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OBJECTIVES/SPECIFIC AIMS: Our objectives are to provide opportunities for graduate students, clinical interns, and postdoctoral fellows in traditional training programs to have direct clinical research contact from a CRP perspective. In addition, we aimed to address common causes of job dissatisfaction by providing professional development and networking opportunities for the existing CRP workforce. METHODS/STUDY POPULATION: In collaboration with the CTSA workforce development group, the Duke Office of Clinical Research hosted a site visit for 19 PhD scientists interested in nontraditional career pathways and a short lecture series on project management careers in clinical research. Additionally, we crafted specific clinical research training electives for 20 masters students and 10 dietetic interns. Finally, in collaboration with UNC-CH, we combined Research Professional Networks to provide a pilot joint professional development event for 109 CRPs from both schools. RESULTS/ANTICIPATED RESULTS: The number of Masters students enrolling in the CRP elective grew from 7 students in year 1 to 13 students currently enrolled. A retro/ prospective adapted CRAI survey was issued following program completion. Students self-reported increases in competence across all 24 skills measured. Largest increases were seen in areas specific to CRP roles such as consenting patients, understanding the IRB, and reviewing key study documents. A baseline culture survey issued at the joint Duke/UNC CRP event garnered a 65% response rate. In 1’s, the principal gaps in professional training are in communications, teamwork, leadership, and professionalism. Moreover, respondents indicated that creating a sense of community and providing networking opportunities were the most important outcomes for future CRP collaborations. Future evaluations of both of these programs will allow us to tailor training to be most effective in strengthening our CRP workforce. DISCUSSION/SIGNIFICANCE OF IMPACT: These initiatives lay the groundwork for the development of a robust training pipeline into CRP careers. Future initiative will apply lessons learned toward creating internship programs aimed at improving diversity and inclusion within these careers. In addition, by addressing the professional development needs of the existing workforce, we create a sustainable environment for well-trained professionals. By evaluating these primary initiatives, we can better define the critical elements that must be included in CRP educational, development, and support programs and subsequently apply these to ultimately improve the clinical and translational research being conducted in academic research settings.

An education program for engineering students collaborating with clinician scientists to address priority hospital patient safety problems using an ethnographic research approach
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OBJECTIVES/SPECIFIC AIMS: Enhancing Patient Safety for hospitalized patients is a priority for healthcare facilities, providers, and federal funding agencies. Multidisciplinary partnerships in clinical and translational research better defines the scope of complex patient-safety issues, and is part of more effectively developing interventions. The discipline represented by engineering-trained partners brings valuable perspective to patient safety problems through their training background in human factors and systems analysis. The objective of this education program was to create and implement a collaboration between engineering students and clinical providers. Through the Johns Hopkins Institute for Clinical and Translational Research, a multidisciplinary partnership was created, to identify contributing factors, and suggest novel solutions, to key patient safety problems using an ethnographic research approach. METHODS/STUDY POPULATION: The collaboration was formed between the following Johns Hopkins (JH) groups: (1) The Institute for Clinical and Translational Research (ICTR), (2) The Armstrong Institute for Patient Safety, (3) The JH Hospital Clinical Engineering Services, (4) The Homecare Group, (5) The Masters of Science in Engineering Management Program at the Whiting School of Engineering, and (6) The JH Hospital Risk Management. All 6 provided representation to contribute to the planning, structure, and implementation of the project. The initial cohort was 24 masters students enrolled in the JHU Whiting School of engineering, and included 46% men, 34% women, and 75% international students. Students were placed in teams of 2–3 to work on 9 distinct patient safety concerns, as provided by the Armstrong Institute as priority. Potential clinical hosts from the appropriate clinical departments were vetted for feasibility and scope before students were assigned to them. Students and clinical hosts were oriented to the process. The students then spent 3–6 weeks with clinical partners at sites for 7 weeks, observing and working alongside patients and health professionals at their specific clinical sites, conducting ethnographic research under the guidance of their hosts. Ethnographic research is the systematic investigation of a culture or system; in our application, teams were looking at the environment, culture, and its contributing factors, with respect to patient safety. The methods teams made use of and data collection hypothesized and collected data relevant to what systems factors may be contributing to the patient safety issue. Following data collection and analyses, teams made recommendations for culture and/or systems shifts that could impact change and improve patient safety. Ethnography research process training is a tenet of the training undertaken by all Masters of Science in Engineering Management Students. RESULTS/ANTICIPATED RESULTS: At the end of the 7-week project, each team generated a comprehensive report suggesting potential solutions for each problem, and gave presentations on their findings to their peers, clinical hosts, and JHU steering committee representa- tives. Requirements on the student side included a midterm, final presentation, and report. Both students and site leaders submitted mid- and final project evaluations. Based on follow up data, 71% of students thought the course may impact their career choice, 57% said the collaboration changed the way they viewed themselves, and 28% elected to continue working or were planning to work with their site in some fashion after the course ended. Nearly 60% of students believed additional funding or resources would benefit the course and 71% thought they would benefit from more or similar experiences with their clinical partners. Furthermore, 85% wanted to see the course expanded. Of the clinical hosts, 71% said that students added value, 86% believed students changed their perspective on their problem, unveiled new areas of investigation, and improved or likely would improve patient safety in their department. Seventy-one percent of hosts were actively acting on the students’ findings, and over 86% shared findings with their colleagues. Following the 7-week program, 2 teams also presented their findings to committees within the hospital departments, 2 patient-safety projects are being continued with engineering teams, and 2 new collaborative projects have been initiated.
Clinical research management and regulatory compliance: A graduate distance learning model
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OBJECTIVES/SPECIFIC AIMS: Goal—broaden the academic offer to enhance clinical and translational research productivity and cost effectiveness. Objective—implement a distance learning program on conducting proficient research management.

METHODS/STUDY POPULATION: Needs assessment attested students’ interest in enrolling and willingness to recruit graduates by the research industry and academia. A master of science in clinical research management and regulatory compliance (MS-CRMRC) was developed using the Core Competency Domains for Clinical Research Professional.

DISCUSSION/SIGNIFICANCE OF IMPACT: Improvement of clinical and translational research productivity and efficient use of grants prevails as a generalized concern. The MS-CRMRC offers an accessible alternative to empower the research enterprise by developing knowledgeable skilled professionals to tackle this need.

Leading diverse and emerging scientists to success (LEADS)
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OBJECTIVES/SPECIFIC AIMS: To diversify the biomedical research workforce by training postdoctoral scholars and junior faculty from 6 Minority Serving Institutions (MSIs) on practical research skills such as Critical and Creative Thinking, Formulating the Problem, Asking the Right Question, Grant Writing, and Team Science.

METHODS/STUDY POPULATION: Needs assessment of 26 mentoring/career coaching traits. Every trait included: “amazing,” “powerful,” “excellent program,” “learned so much.” For the first year, we selected 13 LEADS Scholars. All but 3 scholars elected to take every module. The 3 scholars did not enroll in the Peer Reviewing module. Results of the brief survey at the end of each module indicate that the scholars value each of the modules and rate them very highly. When 1 scholar wanted to leave the program, we decided to have a conference call with all of the LEADS Scholars.”

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