

three cohorts of doctoral students (N=30) to identify sub-disciplinary knowledge integration and application. RESULTS/ANTICIPATED RESULTS: Integrated Final Projects indicate that the integration of IS, Program Theory and Research design within semester two yields application of integrated, sub-disciplinary knowledge to research design, identification of mechanisms of action and the address of barriers and facilitators to implementation of findings. Future analysis will be conducted to determine the degree to which dissertations reflect a similar level of sub-disciplinary integration and focus on implementation within the appropriate service setting. DISCUSSION/SIGNIFICANCE OF IMPACT: Training future translational researchers to understand and use implementation science theories, models and frameworks can potentially result in narrowing the science-to-service gap.

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Emergency Dispatch Research Workshop: Engaging a Forgotten Professional Population in Research

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OBJECTIVES/SPECIFIC AIMS: Emergency (911) dispatchers are the first link in the chain of care for the estimated 240 million emergency calls made each year. Yet even as emergency medicine, public safety, and public health have seen increasing study, emergency dispatch has very seldom been included in that research. Part of the reason is that, while emergency medicine is connected with hospital physicians and public health with university departments, emergency dispatch is largely invisible, not represented in university programs, and staffed by professionals without research training—and often without higher education or academic degrees. The purpose of our Dispatch Research Workshop is to engage these professionals in guided research projects of their own design, with the ultimate aims of both engaging more emergency dispatchers in research and increasing the field's overall capacity to generate evidence-based practice. METHODS/STUDY POPULATION: The workshop is help in tandem with a national Emergency Dispatch conference. Participants are recruited through advertisements in professional journals and relevant social media sites. The workshop is co-led by members of a partnership between the nonprofit organizations the International Academies of Emergency Dispatch and the UCLA Prehospital Care Research Forum, along with the dispatch data aggregation company FirstWatch. The Workshop occurs over two eight-hour days, and participants generally have no research experience or background. By the end of the second day, groups have developed research questions and methods, begun to write IRB proposals, and created data collection and analysis plans. Throughout the remainder of the year, research mentors support the completion of the project, and completed projects are presented at the following year's conference and submitted (if desired) for publication. RESULTS/ANTICIPATED RESULTS: During the first two years of the workshop, 36 attendees participated (17 the first year and 19 the second). Three successful attendees of the first workshop helped lead the second as research mentors. Three research projects were completed from the first year; all three were presented as posters and are now being prepared for publication as manuscripts. Four projects have emerged from the second year's workshop. Assessments and one-on-one interviews with participants at the end of each workshop have led to continuous change and improvement in the delivery of the material, as well as the outline of a year's worth of support materials, which is currently in development.

DISCUSSION/SIGNIFICANCE OF IMPACT: Developing a true evidence base for practice in emergency dispatch will serve all of our communities, and feedback from our participants (as well as significant existing research in practitioner-engaged research) indicates that those who participate in research have a better understanding of the value of evidence-based practice, are more likely to adopt it, and are more likely to raise questions and test theories in their own professional life. Also, providing these practitioners the opportunity to conduct and publish research raises their stature and the stature of their profession, helping it achieve its rightful place alongside other professions in public safety and health.

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Engaging American Indian Students in Oncology Research and Health Professions Education: A Review of the Literature

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OBJECTIVES/SPECIFIC AIMS: The primary goal of the project was to conduct a narrative review of the published literature to identify and summarize best practices for developing oncology-focused research and training experiences for AI/AN undergraduate, graduate and professional students. A secondary goal was to identify methodological limitations and areas for future research related to rigorous educational program evaluation. METHODS/STUDY POPULATION: Published literature was searched using databases relevant to oncology (PubMed, Web of Science) and sociology (PsychINFO, SocIndex). The bibliographies of identified relevant papers were searched for additional references by title. Search terms included synonyms and commonly used terms for three general areas: (1) target population (e.g., American Indian), (2) training area (e.g., oncology), and (3) educational program (e.g., undergraduate). RESULTS/ANTICIPATED RESULTS: A current total of 107 original publications and 33 review papers that are relevant to the project goals have been identified. Key areas of program development and implementation relate to advertising and recruitment; didactic curriculum in research methods, cancer health disparities, and professional development and career planning; research immersion experiences through shadowing, networking, application of research skills, and opportunities to develop oral and written communication skills; ongoing career development support; mentoring by faculty, advanced trainees, and peers; and culture-specific enrichment. Important areas for program evaluation relate to measures of reaction, knowledge, practice and long-term outcomes. Evaluation design approaches include observational and experimental designs with recommendations for identifying relevant control groups. Strategies to ensure complete long-term follow-up are also summarized. DISCUSSION/SIGNIFICANCE OF IMPACT: Successful programs address barriers related to perceived lack of abilities, lack of AI role models, limited culture-specific enrichment, and limited mentoring and ongoing career development support. Program directors should work with local tribal and community leaders when creating a new program. A high degree of coordination is needed to create a bicultural program to interest students in a research career and avoid the creation of barriers hidden to the program director. There are opportunities to improve the rigor of educational program evaluation in this setting by including measures beyond self-reported reaction and knowledge to focus on educational program enrollment and completion and long-term career outcomes. Methodologic

challenges include identification of relevant control groups for comparison and the use of experimental designs.

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Enhancing Mentee Motivation Using the CARES Mentoring Model: A New Online Mentor Training Module

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OBJECTIVES/SPECIFIC AIMS: The goals of this project are to develop, disseminate, and evaluate an online, self-paced training module designed to help mentors better understand and support their mentees' motivation. The module introduces learners to the CARES mentoring model, which is rooted in Self-Determination Theory (SDT), one of the leading theories of motivation. According to SDT, an optimal mentoring environment provides support for mentees' psychological needs for Competence, Autonomy, Relatedness, Equity in extrinsic resources, and Structure (CARES). **METHODS/STUDY POPULATION:** Content for the CARES online module was drawn from a previously developed two-hour mentor training workshop designed for delivery in a face-to-face, small group setting. Content experts developed a slide deck and speaker notes. These materials were edited, adapted into a storyboard, and translated into a 60-minute interactive online module created with e-learning authoring software (Articulate Storyline). An evaluation survey was developed to assess mentors' perceived skills gains related to course content (e.g., "Encouraging my mentees to think about how well their psychological needs are being met within the work/training environment," "Recognizing how diversity, equity, and inclusion can be salient issues that impact a mentee's motivation") and mentors' confidence gains in their ability to implement motivation-focused practices into their mentoring relationships (e.g., "Autonomy: Giving my mentees freedom in deciding what goals to pursue and how they to do their work," "Competence: Working with my mentees to establish appropriate challenges to stretch their abilities"). The module was beta tested in October 2018 by 11 individuals with experience as mentors and in facilitating mentor training. **RESULTS/ANTICIPATED RESULTS:** The beta testing process produced useful recommendations for improving clarity of content, visual design, and navigation. Users expressed a high level of enthusiasm for the content, which included a combination of practical information and empirical support for the CARES mentoring model. They also appreciated specific functionality in the module, including the presentation of brief case examples of mentoring scenarios that enhance or diminish motivation, opportunities for self-reflection, and a downloadable guide for initiating conversations with mentees about different domains in the CARES model. Evaluation data (quantitative and qualitative) from beta testers (n=11) are being analyzed. A preliminary examination of these findings found that mentors report gains from before to after the training in their self-perceived skills and confidence levels. Moreover, all expressed an intention to make changes in their mentoring practices as a result of the training. Comments indicated potential value in offering a follow up face-to-face experience in which mentors can hear from others who have successfully implemented the CARES approach and acquire practice in skillfully implementing the CARES conversation guide with their mentees. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This innovative e-learning module offers a readily accessible and theoretically driven training approach to help mentors recognize the value of supporting their mentees' motivation, and become more intentional

in implementing motivation-focused practices into their mentoring relationships. In future work, the CARES module will be pilot tested with specific cohorts and in different implementation scenarios (as a standalone training, or combined with other programming) and made available to users nationally with support from the University of Minnesota Clinical and Translational Science Institute and the NIH National Research Mentoring Network.

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Evaluation of Mentor Academy using self-assessed research mentoring competencies

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OBJECTIVES/SPECIFIC AIMS: The goal of the Wake Forest Clinical and Translational Science Institute (WF CTSI) Mentor Academy is to contribute to increasing the next generation of faculty with competencies specific to research mentoring. The curriculum of the Mentor Academy is adapted from an evidence-based national curriculum developed by the National Research Mentoring Network and includes 20 contact hours of didactic and experiential training, complemented with outside readings and assignments. A pre-post-follow-up competency assessment is built in as part of the curriculum for both participants and their current mentees. The purpose of this study was to assess self-rated research mentoring competencies among the Mentor Academy participants to better understand the effectiveness of the Mentor Academy. **METHODS/STUDY POPULATION:** A total of 37 mid-level or early senior faculty members from WF have participated in the 3 Mentor Academy cohorts that have completed so far. All of the participants receive 5% salary support and are expected to regularly participate in Mentor Academy sessions; complete a pre, post, and 6-month follow-up self-assessments; and provide a list of their active mentees. The identified mentees are also asked to assess the participating mentors' research mentoring competencies before the start and 6-months after the end of the Mentor Academy. The same list of 26 mentoring competencies are included in the self-assessments for both mentors and mentees. **RESULTS/ANTICIPATED RESULTS:** The initial results of the self-assessments suggest that mentors are coming into the academy with a rather high self-assessed competency ratings. The change in competency ratings pre/post is not as significant. On average the change in self-assessed competency ratings increases by 1.0 on a 7-point scale. Interestingly enough, for 2 of the cohorts where mentees were also asked to assess their mentors' competencies, the mentees rated their mentors as having a higher competency (for all 26 items) than what the mentor rated themselves, at both pre and 6-month follow-up assessments. **DISCUSSION/SIGNIFICANCE OF IMPACT:** After compiling data for 3 different cohorts, we are consistently seeing similar patterns in self-assessed competency ratings; participants are coming in with a high level of competency and an increased level of competency rating by mentees. These findings need to be further considered. For example, the program administrators need to discuss how participants are recruited, if we are recruiting the intended users, and what should we be expecting as an outcome(s) of the program. We also need to further explore different perceptions of mentor-mentee relationships and expectations to see how reliable are the data from mentees. A collaboration with the National Research Mentoring Network is also needed to see how the self-assessed competencies compare to those utilizing their curriculum outside of WF.