multiple-choice, open-ended survey including questions regarding, definition, impact, barriers, resources, and training preferences specific to translational science. Digital survey links were emailed to Duke University faculty. RESULTS/ANTICIPATED RESULTS: In total, 350 responses were collected. While perceptions of translational science varied, common defining elements were noted, including multidisciplinary collaboration (69%) and transitions between research stages (63%). Translational science was said to have an overall positive impact, despite 37% of participants stating issues of insufficient institution-wide support and 62% citing minimal training in translational science skills. DISCUSSION/SIGNIFICANCE OF IMPACT: Effective support for translational science requires a multi-faceted approach, as perceptions differ among investigators and between career stages. Duke MERITS will seek to standardize education and support ranging from teambuilding to entrepreneurship, and to promote support from institutional leadership to reduce barriers and facilitate acceleration of translational science.

2122

Perspectives on increasing competency in using digital practices and approaches to enhance clinical translational research: A qualitative study

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OBJECTIVES/SPECIFIC AIMS: The use of digital practices and approaches can potentially increase the quality and efficiency of all phases of the traditional clinical translational research (CTR) process. The purpose of this qualitative study was to describe key stakeholders' perspectives on the need to: (A) formalize training in digital practices and approaches among CTR trainees; and (B) develop an aligned educational framework that defines core competencies, educational methods, and evaluation metrics. METHODS/STUDY POPULATION: Participants (n = 66) were recruited via email from June to November 2017 using purposive and snowball sampling methods across 4 groups: (1) English speaking national and international experts from academic and private sector institutions with working experience in using digital practices and approaches in research (n = 36), (2) CTR educators (n = 8), (3) CTR trainees (n = 13), and (4) Members of the Southern California Clinical and Translational Science Institute at the University of Southern California (n = 9). Online focus groups were conducted using a semi-structured, open-ended interview guide through Google Hangouts and a conference call interface. Sessions were recorded and transcribed verbatim, and 2 research team members performed independent content analyses to identify before and emergent themes using an inductive analytic approach. Kappa was calculated for inter-rater agreement and repeated until agreement was at least 0.70. RESULTS/ANTICIPATED RESULTS: Participants' average age (41.2 yrs, SD 9.26), gender (59% females), non-Hispanic (97%), race (72% White), and doctoral degree (67%). In total, 85% reported experience in teaching digital practices and approaches in research, although 70% were currently not teaching in this field. Participants reported that complementary teaching in digital practices and approaches across the 15 Clinical and Translational Science Award (CTSA) CTR competency areas was relevant, especially in literature review, research implementation, statistical approaches, biomedical informatics, regulatory support, responsible conduct of research, scientific communication, translational teamwork, cross-disciplinary training, leadership, and community engagement; and less so in literature critique, study design, sources of error, and cultural diversity. Additional competencies were identified, for example, online study recruitment, crowdfunding, team and project management, scholarly impact metrics (Altmetrics), ethical and regulatory guidance for conducting research using digital approaches. Five main educational practices were identified including online training sessions, flexible on-demand modules, in-person consultations and training, and project-oriented hands-on workshops. Among the identified challenges were the need for clear metrics in order to evaluate such a training program. DISCUSSION/SIGNIFICANCE OF IMPACT: There was consistent support for a structured program to help CTR trainees to develop competency in digital research practices and approaches. Our results indicate that an education program focused on digital practices and approaches should include a step-wise approach to meet different research and training goals, allowing attendees to increase their awareness and specialized hands-on practical experience.

2531

Phase II award: Evaluation of outcomes in preparing independent researchers by continued mentoring and career development support (2006–2016)

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OBJECTIVES/SPECIFIC AIMS: The Hispanic Clinical and Translational Education and Career Development program entails formal research training (Phase I) through an established post-doctoral Master of Science in Clinical and Translational Research. The most qualified graduates from Phase I compete to receive 1–2 years support for continued mentoring and career development (Phase II program) aiming to apply for a regular research grant or career award (K or R series). OBJECTIVE: This project aims to present an evaluation of the Phase II program and Scholars outcomes. METHODS/STUDY POPULATION: METHODS: Participants (n = 12) responded to a semistructured interview including 43 questions about program's processes and outcomes. Descriptive and content analysis was done. RESULTS/ANTICIPATED RESULTS: RESULTS: Results show that 83% are women, 42% are MD, and 67% are affiliated to the University of Puerto Rico-Medical Sciences Campus and 67% were able to fulfill their career development expectations during the Phase II Award. At present (92%) are conducting clinical research in their current position. Outcomes include new selection of research line, K Awards, and enhanced skills in clinical and translational research DISCUSSION/SIGNIFICANCE OF IMPACT: DISCUSSION: Challenges identified were: time management, better coaching and a more structured mentoring experience. The main benefit of the program were protected time, research budget, and the opportunity to acquire more research experience.

2474

Promoting collaboration among researchers: A team science training curriculum

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OBJECTIVES/SPECIFIC AIMS: As multidisciplinary, interdisciplinary, and transdisciplinary research has become imperative to solving the complex problems of contemporary healthcare, teaching researchers how to create and maintain high-functioning and innovative teams has also become paramount. In Fall 2016, the Center for Improvement Science (CIS) core, in collaboration with the Translational Workforce Development (TWD) core, at the Cincinnati Center for Clinical & Translational Science & Training (CCTST) began offering training in Team Science in an effort to better prepare researchers for collaborative work. Since then, the CIS has expanded Team Science education into a multifaceted and adaptable curriculum that includes workshops, team consultations, Grand Rounds, grant writing assistance, grant review, train-the-trainer, and a graduate-level course. METHODS/STUDY POPULATION: Over almost 2 years, we have offered 9 unique workshops attended by individuals from the University of Cincinnati, UCHealth, and Cincinnati Children's Hospital Medical Center. Recruitment was primarily accomplished via email invitations. Topics ranged from introductory team science issues such as Creating Teams, Team Effectiveness, and Team Leadership to more advanced team science areas such as Team Dysfunctions and Conflict Management. In addition, we have consulted with researchers on Team Science components of grant applications and served as grant reviewers for Team Science elements in a competitive, internal research funding program. We have developed tools and teaching strategies for faculty members tasked with teaching students about collaboration (train-the-trainer). And finally, we offered a graduate level course on Collaboration and Team Science. RESULTS/ANTICIPATED RESULTS: Over 250 participants attended our workshops and Grand Rounds, many at the faculty level, but we also had research staff and graduate students register. Content was very well-received, with workshop evaluations typically scoring in the high 4.5 and above range (on a 5-point scale, with 5 being the highest rating). The CIS team received (and accepted) at least 2 follow-up invitations from workshop participants to provide training to an additional team or group. We are tracking data on long-term effects of team science training and consultation, both in research productivity and team satisfaction/longevity. DISCUSSION/SIGNIFICANCE OF IMPACT: The goals of Team Science training at the Cincinnati CCTST are 2-fold: to provide practical knowledge, skills, and tools to enhance transdisciplinary collaboration and to promote systemic changes at UC, CCHMC, and UCHealth that support team science. After almost 2 years of training, team science is gaining traction among key leaders at our local institutions and a broader audience of researchers who see how collaborative practice can enhance their professions.

2490

Research navigation services and onboarding: Succeeding in the research environment

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OBJECTIVES/SPECIFIC AIMS: Describe (1) the components of the research navigation service and consultation/onboarding program, (2) use and adoption of the services, and (3) the overall satisfaction from the research community.

METHODS/STUDY POPULATION: Duke offers 2 programs to support researchers: Research Navigation and Researcher Onboarding. The services aim to connect researchers to resources, offices, funding opportunities, and other collaborators. The general Research Navigation Service is an on-demand "hotline," where navigators answer questions from researchers across the institution, helping them understand processes, best practices, and how to locate resources or potential collaborators. Navigators can be reached via the myRESEARCHhome portal, email, or by phone. The researcher onboarding program is a free 1:1 consultative service, focused on the researcher's individual portfolio, stage of career, and immediate plans in the research arena. The goal is to equip researchers "from the start" to be successful. Researchers are identified via the new faculty hire list, or by referral. Both services are provided by the myRESEARCHnavigators team, who are trained in a variety of research areas, from basic to clinical to social sciences, and are familiar with Duke. RESULTS/ANTICIPATED RESULTS: Use of both services has increased substantially over the year. Of the almost 200 faculty members hired into the School of Medicine in 2017, ~75% have taken part in the onboarding program, and 91% have rated the service as 5-stars. The content of the sessions will be described. The Research Navigation service has fielded hundreds of calls since its inception, with topics including Equipment and Facilities (55 requests), Study start up (44 requests), Innovation and Technology (15 requests), and Regulation and Policy (25 requests). Categorization of requests, users of the services, and other information about the programs will be described. DISCUSSION/SIGNIFICANCE OF IMPACT: The navigation and onboarding services are proving to be a successful way to increase efficiency and understanding of processes and resources across the institution. Feedback from the users, coupled with high referral rates to the programs, suggests that the program is helping researchers feel better equipped with regard to their research planning, conduct, and analysis.

2495

Respiratory therapists' awareness and intention to use the electronic modified early warning score (eMEWS)

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OBJECTIVES/SPECIFIC AIMS: To determine if an educational intervention designed to increase respiratory therapists' knowledge of the modified early warning score (MEWS) would influence their intention to use the MEWS. METHODS/STUDY POPULATION: A web-based self-administered survey based on the constructs of the TAM as well as awareness, attitude, and job-relevance was developed and validated using traditional scale development process and distributed to 75 respiratory therapists (RTs) from the respiratory care department of Rush University Medical Center. RTs were recruited for participation in the study using consecutive sampling. The RTs were then given a training session on the MEWS after which they were again asked to complete the survey. RESULTS/ANTICIPATED RESULTS: The response rate to both the pre and post survey was 60 percent. Of the 46 participants recruited to the study, the educational intervention elicited an increase in the MEWS knowledge score in 45 participants compared with the knowledge score prior to the educational intervention. Additionally, there was an increase in the behavioral intention score post intervention in 30 participants compared with the behavioral intention score before the educational intervention. A Wilcoxon signed-rank test determined that there was a statistically significant median increase in MEWS knowledge score (2.0) post educational intervention (4.0) compared with pre-educational intervention (2.0), $p < 0.0005$. There was also a statistically significant median increase in behavioral intention score (0.667) pre-educational intervention (4.0) compared with posteducational intervention (3.0), $p < 0.0005$. DISCUSSION/SIGNIFICANCE OF IMPACT: Numerous studies over the last 4 decades have demonstrated that change in behavioral intention is a good predictor of change in behavior. Consequently, the increase in the respiratory therapists' behavioral intention score post MEWS education suggests that they may be more inclined to incorporate the MEWS score in their assessment of patients if they are educated about its clinical relevance. Additionally, the study results verified key postulates of the TAM, suggesting that the TAM is an appropriate model for assessing respiratory therapists' perception and reaction to new systems, and may also help respiratory care managers develop new mechanisms that facilitate respiratory therapists' adoption of new systems and processes.

2494

Selectives: Implementing self-directed collaborative selectives as part of a curriculum for pre-health care professional students

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OBJECTIVES/SPECIFIC AIMS: To provide students an opportunity to select health care-oriented course work that reflects both their interests and the increasingly diverse spectrum of health professions education and health care careers. To increase the opportunity for students to enter professional schools and health care professions with enhanced engagement and experience. METHODS/STUDY POPULATION: The 4-credit elective (Selective) curriculum is a component of the 38 credit Duke School of Medicine Master of Science in Biomedical Sciences (MBS) program which is completed over 10.5 months. Students work closely with their advisors to choose activities that reflect their interests. Selectives are offered by an array of schools, institutes, and programs within Duke University, including: the School of Medicine, School of Law, Global Health Institute, Bioethics and Science Policy Master Program, Clinical Research Training Program, Center for Documentary Studies, and Medical Informatics. Students may also pursue directed studies in areas such as health policy, or an inter-professional trip to Honduras. In addition to the course-based Selectives, three research practicum options are offered: Community Engagement, Clinical Research (Duke Office of Clinical Research), and a self-selected mentored research experience. Finally, the MBS program offers 2 in-house specific Selectives: Fundamentals of Learning: Theory and Practice, and Planning for Health Professions Education. RESULTS/ANTICIPATED RESULTS: The MBS program accepted its first cohort of students in June 2015. Two cohorts have graduated and the third has begun ($n = 30$, 2016; $n = 42$, 2017; $n = 43$ enrolled, 2018). Our students come from diverse background with a third from populations historically underrepresented in STEM due to race/ethnicity, and another third underrepresented due to other factors such as low socioeconomic status, first generation to college, LGBQT, and those from rural and immigrant communities. Thus far, Selective distribution has been: Clinical research practicum (7, 2016; 14, 2017; 9, 2018); Mentored research practicum (2, 2016; 1, 2017); Community engagement practicum (7, 2016; 4, 2017; 5, 2018); Planning for health professions educations (14, 2016; 32, 2017; 33, 2018), Fundamentals of learning: Theory and Practice (7, 2016; 17, 2017; 18, 2018); documentary film (1, 2016); inter-professional trip to Honduras (2, 2016, 2, 2017). Since the implementation of the curriculum, at least 53 of 70 students who have applied (76%) were admitted to health professions or other graduate schools despite having lower initial MCAT and undergraduate GPAs in aggregate than the average of students who matriculate to allopathic medical school programs: 41 to medical schools, 3 to dental school, 2 each to osteopathic and physician assistant schools and 1 each to physical therapy, business school and law school. Eighteen of the 2016 graduates, and 21 of the 2017 graduates work in research for their gap year following graduation, the majority being employed in our institution's research programs providing a pipeline of trained research assistants and coordinators. DISCUSSION/SIGNIFICANCE OF IMPACT: Lessons learned by implementing our curriculum include the following: (1) students are eager to explore different areas of health care; (2) collaboration across schools, centers, departments, institutes, and offices increases our ability to identify common areas of interest; (3) implementing a diverse curriculum can be challenging due to the need for significant organization and planning; (4) the diversity of courses can be a source of confusion when there is a lack of standardization in learner expectations; (5) continued collaboration across, schools, centers, institutes programs, health professions and sections requires a significant amount of time and expertise. However, our programs demonstrate significant positive impacts both on students and at the institutional level. Our program shows that a diverse curriculum leads to a high number of students engaged in pursuing and successfully continuing a health profession education. Institutional benefits include a robust pipeline for a diverse research workforce.

2017

Sowing the "CEED"s of a more diverse biomedical workforce

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OBJECTIVES/SPECIFIC AIMS: The need to diversify the biomedical research workforce is well documented. The Career Education and Enhancement for Health Care Research Diversity (CEED) program at the University of Pittsburgh Institute for Clinical Research Education (ICRE) promotes success and helps seal the "leaky pipeline" for under-represented background (URB) biomedical researchers with a purposefully designed program consisting of a