Science 101 is the general public and media outlets who are interested in learning more about clinical and translational science and how this research is improving population health. The University of Rochester Clinical and Translational Science Institute created the course in order inform the public about the field of clinical and translational science, orient the public to the types of research that fall under the translational science umbrella, and demonstrate how translational research impacts populations. The Coursera Massive Open Online Course (MOOC) platform was selected to host the course in order promote the greatest level of exposure and also to expand the educational reach of the UR-CTSI to new external audiences. The course was constructed from scratch utilizing the Community of Inquiry (CoI) framework, an approach that is often utilized to guide the design and construction of asynchronous online coursework. CoI highlights the elements of social presence, cognitive presence and teaching presence as key factors impacting the educational experience learners have when enrolled in an online course. Discussion boards, embedded quizzes, and end of module quizzes were integrated in to the course design to promote learner engagement, collaborative learning, and interactions among learners. The "story-telling" instructional strategy is the backbone of the Introduction to Clinical Science modules, with various researchers from the University of Rochester Medical Center explaining their lines of research and how the research impacts patients and communities. Educational research has shown that there are many benefits to including storytelling in instruction (Green, 2004; Geanellos, 1996), including: (1) Stories create interest: The narrative structure increases learner interest and engagement as they are drawn in to a good story. (2) Stories create a more personal link between the learner and the content: Storytelling allows exploration of shared lived experiences without the demands of practice and allows students to make connections between the shared experiences and their own previous experiences and knowledge. (3) Stories provide a structure for remembering course materials: The inclusion of stories facilitates remembering because it is easier to remember a story rather than a list of disparate facts, and stories evoke vivid mental images which are an excellent cue for recall. (4) Stories are a familiar and accessible form of sharing information: Storytelling aids in overall learner understanding as it is a nonthreatening way of sharing information. Storytelling can also enhance course discussions as students feel more at ease discussing a story than discussing abstract or new concepts that they are still in the process of mastering. RESULTS/ANTICIPATED RESULTS: Introduction to Translational Science was launched on October 16, 2017, and is automatically scheduled to begin a new session every 3 weeks. To date the course has reported the following analytics: (1) 2308 learners have visited the course page, (a)476 learners have enrolled in the course; (b) 244 learners are currently active in the course; (c) 11 learners have completed all of the requirements of the course. (2)Learners by Continent, (a) North America 31%; (b) Asia 30%; (c) Europe 23%; (d) Africa 9%; (e) South America 5%; (f) Oceania 2%. (2) Learners by Country: Learners have come from 84 different countries from around the world. The 15 highest enrollment numbers are: (a) USA 25%, (b) India 11%, (c) Egypt 3.7%, (d) United Kingdom 3.4%, (e) Mexico 3.2%, (f) Brazil 2.8%, (g) China 2.8%, (h) Saudi Arabia 2.2%, (i) Spain 2.2%, (j) Germany 1.7%, (k) Russian Federation 1.7%, (l) Malaysia 1.5%, (m) Turkey 1.5%, (n) Italy 1.5%, and (o) Canada 1.5%. (3) Gender: 48% women and 50% men. (4) Age: (a) 13–17: 0.72%, (b) 18–24: 19.6%, (c) 25–34: 44%, (d) 35–44: 14.4%, (e) 45–54: 8.6%, (f) 55–64: 7.2%, (g) 65 + : 3.6%. (5)Highest Education Level o Doctorate Degree: 17%; (a) Professional School Degree: 14%; (b) Master's Degree: 31%; (c) Bachelor's Degree: 27%; (d) Associate's Degree: 2.3%; (e) Some College But No Degree: 4.5%; (f) High School Diploma: 3.8%; (g) Some High School: 0.75%. DISCUSSION/SIGNIFICANCE OF IMPACT: The Massive Open Online Course (MOOC) platform offers new, exciting opportunities for CTSA institutions to create courses and trainings that are accessible by learners all over the world. This greatly expands the educational reach that the CTSA education programs can have, moving beyond hub-focused or consortium-focused education to a much broader audience. The expansion of educational reach can promote increased visibility of the CTSA program, encourage collaborations amongst researchers at different institutions, and also inform the public about clinical and translational science, potentially fostering advancement opportunities.

2503

First year medical student characteristics associated with readiness to talk about race

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OBJECTIVES/SPECIFIC AIMS: Calls to break the silence around the effects of racism on health are growing. Few researchers have examined the relationship between medical student characteristics and students' comfort, motivation, and skill to discuss racism. This paper examines medical student characteristics associated with readiness to talk about racism among first-year medical students at the University of Minnesota. METHODS/STUDY POPULATION: In February 2017 prior to a lecture on racism and health, we invited first year medical students to participate in a web-based survey about their experiences and comfort discussing racism. We calculated descriptive statistics and measured differences by student race (White vs. Asian vs. Black/multiracial/other) and undergraduate major type (STEM vs. non-STEM) using χ^2 tests for variables with categorical responses and generalized linear regression models with pairwise comparisons (i.e., 2-sample *t*-tests) for variables with continuous responses. RESULTS/ANTICIPATED RESULTS: (n = 107/163). The majority of students were male (53%); White (75%); and majored in STEM majors in college (85%). College major was not associated with race. Students' responses to multiple items suggest that the vast majority perceived racial inequality as a major problem in the United States. Race was significantly associated with only 1 of these items. Specifically, 100% (16/16) of Black/multiracial/other students [under-represented minority (URM) students] reported "too little attention" is paid to race and racial issues, while only 53% of White students (42/79) and 55% of Asian students (6/11) chose this response. Students with non-STEM majors and students who identified as URM students reported talking about racism with friends more often than STEM majors and white students, respectively. In conversations about race at school, two-thirds of students were concerned that they might unintentionally offend others or be misunderstood. However, non-STEM majors and URM students were significantly less worried that they would unintentionally offend others in conversations about race at school than STEM majors and white students. Larger percentages of URM students (50%) than White students (25%) were afraid that others would not respect their views because of their race. White students were more afraid that they might that they would be called racist than URM students. DISCUSSION/SIGNIFICANCE OF IMPACT: Many students find it challenging to discuss race and racism in medical education settings. URM students and non-STEM majors reported greater frequency talking about racism with friends and appear to be less anxious in conversations about racism than White students and STEM majors respectively. Given non-STEM majors' greater psychological safety discussing racism, future research should explore whether non-STEM majors are better prepared and more motivated to address racial disparities in health and health care than STEM majors. Such research could have important implications for medical school admissions.

2426

Fostering cross-disciplinary research: Lessons learned from STTEP-UP

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OBJECTIVES/SPECIFIC AIMS: N/A. METHODS/STUDY POPULATION: N/A. RESULTS/ANTICIPATED RESULTS: N/A. DISCUSSION/SIGNIFICANCE OF IMPACT: There is an increasing need to foster cross-disciplinary research to address complex problems within healthcare. The Sinai Team-based Translational Education Program: the URM Propeller (STTEP-UP) is a NCATS funded program through the Icahn School of Medicine at Mount Sinai. Its goal is to facilitate URM post-doctoral trainees becoming innovative leaders in clinical and translational research. The program includes a team-based research component, where fellows collaborate on a project. This year, disciplines represented by the four fellows include Cardiology, Psychiatry, Neurology, and Pediatrics. Identifying a clinical question and designing an investigation was facilitated by group brainstorming meetings with program mentors. Fellows designed a project to identify medical testing and prescribing that were not clinically indicated throughout the healthcare system, with the goal of exploring whether an intervention, including provider education, could reduce ordering practices. In addition to regular in-person meetings, a licensed virtual learning environment and free web-based sharing platform were used to foster collaboration. Challenges faced throughout this process, included fellows struggling to find protected time, difficulties accessing broad sets of data across the healthcare system, and overcoming administrative barriers between departments. Strengths of this approach, included fellows learning new research strategies and feeling a deeper sense of commonality with their peers. Overall, this experience supports the idea that cross-disciplinary research improves the collaboration and education of emerging researchers. However, addressing logistical and systems-based barriers may better facilitate this education and research.

2136

Frequently overlooked challenges of pragmatic trials

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OBJECTIVES/SPECIFIC AIMS: To review the multiple differences between traditional research design and on the ground pragmatic trials. To review two pragmatic projects, identify core assumptions and to contrast assumptions with the reality of conducting T3 and T4 research. METHODS/STUDY POPULATION: Observational mixed methods multi trial review of large multi site implementations. RESULTS/ANTICIPATED RESULTS: The complexities of implementation on the ground were consistently greater than anticipated and required changing assumptions and research design elements. DISCUSSION/SIGNIFICANCE OF IMPACT: Research findings are tremendously influenced by design and design implementation decisions. Anticipating the scope and breadth of the challenges will assist potential of successful implementation.

2237

From bedside to benchmarks: A physician-scientist workforce dashboard for biomedical research institutions

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OBJECTIVES/SPECIFIC AIMS: A growing concern about the declining physician-scientist workforce prompted the 2014 National Institutes of Health (NIH) Physician Scientist Workforce to recommended that "tools for assessing the strength of the biomedical workforce" be developed. To aid strategic planning, the Oregon Clinical and Translational Research Institute convened key stakeholders at its home university, Oregon Health and Science University (OHSU), to survey the local landscape of physician scientists. Surprisingly, few consensus methods were available to measure and benchmark OHSU with respect to national comparators. To address this deficit, we sought to develop clear and objective metrics describing physician-scientist success at our institution. By focusing on local funding, we were able to generate more complete and robust data than others have reported. These data also permit us to compare ourselves to the national workforce, using well-curated and accessible national databases. The goal of the analyses is to contribute to strategic decision-making by portraying the local physician-scientist workforce, comparing it to the national landscape, and making recommendations about mechanisms to address potential opportunities. This has led us to develop a simple quantitative dashboard, which now permits OHSU to craft strategic targets and address successes and opportunities. These approaches are likely to be valuable elsewhere. METHODS/STUDY POPULATION: OHSU is a medium-sized academic health center in Portland, Oregon with over 1200 principal investigators and over $230M in NIH funding. The primary focus of our investigation was physician-scientists who receive extramural funding. To align with other analyses, we distinguish physician-scientists with an M.D. only, or with an M.D. and a master's degree, from physician-scientists who hold an M.D./Ph.D. For this distinction, we use the indicator "M.D.-only" to indicate the former. The study design consisted of (a) selection of available and relevant national level data on the physician-scientist workforce, (b) curating of local level data to align it with the national indicators, (c) comparing the 2 sets of data to look for differences in trends over time, and (d) supplementing the analyses with additional local data not available at the national level. Key comparisons were tested for statistical significance and plotted on a dashboard, which was then reviewed by an OHSU internal working group focused on physician-scientists. Data elements included degrees, age, gender, and grants awarded. National data come directly from the NIH Data Book, updated for fiscal year 2016. The NIH makes all funded project data available in the publicly downloadable ExPORTER Data Catalog. These project data were used to supplement the summarized data available from the NIH Data Book, allowing us to extract OHSU investigators and to complete the K to R comparative analysis. For analyses of OHSU investigators holding funding other than RPGs, we relied on institutional data from the OHSU grants and contracts office. Demographic data on OHSU investigators were obtained from departmental and human resource records. The time period for these analyses was 1998–2016. RESULTS/ANTICIPATED RESULTS: At OHSU, as nationally, there has been an increase in RPG-holding Ph.D.s but not in RPG-holding physician-scientists. At OHSU, nearly three-fourth of physician-scientist RPGs hold an M.D.-only degree, compared with nationally, where nearly half of physician-scientists are M.D./Ph.D.s. The percent of younger, early-career, RPG-holding physician-scientists has declined precipitously at OHSU and nationally. At OHSU, the percentage of RPGs held by women physician-scientists is below the national figure. Funding sources for physician-scientists at OHSU were more diverse than for Ph.D. scientists, and physician-scientists comprise the majority of Principal Investigators on clinical trials. These non-RPG sources of funding remain a critical source of support, although local analyses of time spent on research indicate that physician-scientists with NIH funding spend a greater percentage of their time on research than those without. OHSU PI's have had success in transitioning from K08 and K23 grants to R-level grants, with similar percentages receiving RPGs within 5 years. A dashboard comparing these trends was developed. DISCUSSION/SIGNIFICANCE OF IMPACT: There were 3 key impacts from our analyses. First, we developed and disseminated a dashboard with both local data and national comparators. Second, in consultation with institutional leadership, we selected target values to define success for each metric. Third, we recommended actions that will help OHSU meet the selected targets. A major accomplishment of this structured approach has been the identification of opportunities for change that were not recognized previously. For example, leadership was not aware of the substantial and growing deficit in female physician-scientists at OHSU, compared with the impressive increases nationally. Thus, to reduce gender disparity at OHSU, we have recommended purposeful recruitment; one approach is to target female graduates of Medical Scientist Training Programs for faculty positions, as this group has better success at achieving R-level funding than do M.D.-only applicants. Another outcome is to help set ambitious but reasonable targets for improving the local landscape. Thus, we aim to reduce the average age of RGP-holding physician-scientists at OHSU by one year during the next 5 years. Although reversing current trends will not be easy, our analyses suggest that the average age of RPG level physician-scientists at OHSU would decrease were OHSU were to match the national-level proportions of women and M.D./Ph.D. physician-scientists. In addition to targeting gender disparities, we have recently implemented a program that supplements funding for recruiting young physician scientists, and then supporting their pursuit of RPG funding. Locally, a bright spot is the K to RPG transition rate for K23 awardees, which compare favorably with national data, an outcome that we plan to maintain. In analyzing this area of success, one reason is our strong mentorship program, called OCTRI Scholars, which is provided through our CTSA-sponsored institute. This has fostered an atmosphere of success among young physician-scientists and is one of the reasons that we endorse recommendation #9 from the PSWR, suggesting that Clinical and Translational Science Award (CTSA) Institutes play pivotal roles in monitoring and enhancing the success of the physician-scientist workforce. Thus, several perceived deficiencies might be addressed with adjustment of 1 or 2 specific institutional policies. While the specific opportunities and strengths may be different at other institutions, our proposed dashboard, which couples publicly curated, freely accessible databases, with readily available institutional resources, should help institutions to set and achieve their own goals.

2518

InCHOIR learning lab: A TL1 and workforce development initiative at Mount Sinai

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OBJECTIVES/SPECIFIC AIMS: Science and clinical practice are widely regarded as being complementary and synergistic. In an effort to enhance the team science, translational research capacity of the TL1 scholars at Icahn School of Medicine at Mount Sinai (ISMMS), the InCHOIR learning lab aims to provide an accessible, workforce-wide lecture series on the fundamental methods and concepts of randomized clinical trials. METHODS/STUDY POPULATION: The InCHOIR learning lab is a monthly 1 hour lecture series delivered by a range of expert clinical and translational researchers, followed by a 1 hour "Meet the Expert" session. The InCHOIR lecture series has covered a wide range of topics including, but not limited to: Decision Models; Race and Causal Inference; Innovative Strategies for Assessing Environmental Health across the Life Course; Statistics for Geneticists and Genetics for Statisticians; and From the Lab to Translation to Policy—The Neuroscience of Addiction. The "Meet the Expert" session offers TL1 predoctoral and postdoctoral scholars and KL2 scholars the opportunity to have intimate, informal discussions with experts about their career trajectories. RESULTS/ANTICIPATED RESULTS: Feedback from participants has been overwhelmingly positive. Participants have gained important insights into key topics relevant to early stage researchers. The "Meet the Expert" sessions have yielded honest and important conversations about crucial topics ranging from finding effective mentors to essential strategies for establishing a work-life balance, to overcoming adversity as underrepresented minorities and women in translational research. DISCUSSION/SIGNIFICANCE OF IMPACT: Attendance at the InCHOIR learning lab is increasing month on month, indicating the perceived need for this learning not just from early stage researchers, but also from students, senior faculty, and research staff more generally. The InChoir series provides added value through the creation of a video library, fostering new collaborations and contributing to the Icahn School of Medicine at Mount Sinai and Graduate Medical Education landscape. Priorities for the program are to increase internal visibility, in order to continue to grow attendance by MSHS students, research staff, nurses, postdoctoral fellows and residents. The program is also exploring how to engage external participation from regional CTSAs and from community advocates actively involved in community-academic research partnerships.

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