Innovations in Education: Promoting Interdisciplinary Science and Health Equity in Clinical Research

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Abstract

Our work focuses on several gaps in clinical research training. First, trainees lack the early immersion in an environment where they learn that multi- and interdisciplinary science is the norm rather than the exception. This is because training often occurs at the graduate or post-graduate level and is focused on research methods and logistical and regulatory aspects of conducting clinical research. Second, a history of racial injustice in clinical research has led to uneven scientific progress and continued health disparities. Positive clinical research outcomes heavily depend on the relationships we forge with our colleagues and study participants. Our novel programs aim to disrupt the status quo and train a clinical research workforce that considers clinical investigations from a more holistic perspective.

Undergraduate Major in Clinical and Translational Sciences

Rationale for the program:
The development, approval and implementation of clinical interventions require clinical and translational research that will accelerate the process of basic scientific discoveries to the development of impactful interventions. The translational science workforce will need to be familiar with the specific methods associated with patient-oriented translational research and with biomedical research ethics and regulations. There is a national need for a workforce that sees team science and multidisciplinary research as the expectation, rather than exception. Undergraduate education is needed to prepare trainees earlier in their career for translational research.

Rationale for the course:
Graduate students benefit when they consider the relationship among science, scientific discovery, and humanity, and when they build inclusive and respectful relationships. Science is not conducted in isolation. The development of personal, professional and institutional values supports graduate students’ leadership capacity.

Graduate Students: Human Values in Research Course

Rationale for the course:
Centuries of medical research have included studies that exploit and abuse subjects who are Black, Indigenous, and People of Color (BIPOC). The development of a foundational knowledge of critical race theory for research teams increases the understanding that racism, and not race, causes health disparities. Participants should also have a clear understanding of why individuals who identify as BIPOC mistrust the healthcare system. The long history of exploitation in research, is one of the primary reasons BIPOC people do not participate in research studies.

Learning objectives:
- Define critical race theory and structural competency
- Describe the impact of systemic and institutional racism on health and research
- Discuss examples of the exploitation of BIPOC bodies since the time of enslavement to present day
- Acknowledge the history of racism in our health and research systems and have developed the advocacy skills to make changes in our communities

Next Steps:
- Course pilot in Oct/Nov 2021
- Participant evaluation after 1 week and 6 and 12 months
- Course revision based on evaluation and scaled-up to be delivered to all first-year graduate students

Structural Racism in Healthcare and Research Course

Rationale for the course:
A four-week course developed and presented by community partners that explores how the history of racism has shaped the relationships between doctors/researchers and patients/research participants who are Black, Indigenous, and People of Color. Open to UR researchers and community members.

Figure 1. (a) The program represents a cross-campus collaboration of major academic units. (b) It covers a wide range of scientific disciplines.

Learning objectives:
- Understand the public health context of clinical and translational research and its societal implications
- Understand and apply the fundamental principles of clinical research methodology involved in clinical and translational research
- Understand and apply the biological and physiological principles that form the foundation for clinical and translational sciences
- Describe the principles of team science

Figure 2. Curriculum overview of BS degree in Clinical and Translational Sciences. The one-year research seminar will address established translational science competencies with a focus on experiential learning.

Next Steps:
- Implement the research seminar in collaboration with lab PIs as a model of experiential research learning at the university
- Integrate the new major with TL1 and KL2 trainees and activities
- Assess learning and career outcomes for continued improvement

Figure 3. (a) The course was developed through collaboration across the medical center. (b) Curriculum overview of the course

Figure 4. (a) The course was developed through collaboration with community partners, (b) facilitated using a cohort model approach. (c) Curriculum overview of the course.

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