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NEWS FROM NIH

News from NIH: a center for translation research and implementation science

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Cite this as: *TBM* 2015;5:127–130
doi: 10.1007/s13142-015-0310-7

Keywords

Translation research, Implementation science, Population health impact, Prevention, Behavior change, Systems science, NIH funding opportunity

In January 2014, the National Heart, Lung, and Blood Institute (NHLBI) announced the creation of a Center for Translation Research and Implementation Science (CTRIS) [1]. The center's creation is part of the mission-driven realignment of the NHLBI Office of the Director which has made a strong commitment to serve as a catalyst for advancing translation research and implementation science in heart, lung, blood, and sleep disorders. In this column, we present the rationale for the creation of CTRIS; its primary charge and mission; the spectrum of activities in its first year and related funding opportunity announcements; and the scope of future research and scientific endeavors to promote the effective translation and dissemination of evidence-based interventions.

RATIONALE FOR CREATING CTRIS

The classic work of Balas and Boren [2] showed that only a fraction (14 %) of published scientific discoveries result in widespread translation and implementation in clinical practice, with an average latency period of 17 years. Others believe that this is an underestimate of the enormity of the chasm between scientific evidence on one hand, and patient care and population health on the other. As a result, there has been growing concern that research investments have not realized their full potential. For example, in spite of the remarkable scientific discoveries that allow us to prevent, treat, and control coronary heart disease, only a third of patients who have had a heart attack receive or adhere to evidence-based treatments [3].

In addition, a random sampling of Americans living in metropolitan areas indicated that most received, on average, only half of recommended quality health care [4]. In 2010 for example, aspirin was prescribed or continued in only 53.8 % of the office visits by patients who would benefit from aspirin use for the secondary prevention of heart attacks or strokes [5]. Even among those who have access and receive evidence-based quality care, treatment and health maintenance remain suboptimal and are often characterized by marked clinical practice variation and persistent or widening health inequities in population groups defined by race, ethnicity, sex, socioeconomic status, and geography [6, 7]. Numerous complex

A list of the Trans-NHLBI T4 Translation Research Work Group members is attached.

The Trans-NHLBI T4 Translation Research Work Group Members

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Blaisdell, Carol
Cooper, Lawton
De Jesus, Janet
Engelgau, Michael
Fine, Lawrence
Freemer, Michelle
Glynn, Simone
Hoots, W. Keith (Co-Chair)
John-Sowah, Joylene
Kaltman, Jonathan
Kaufmann, Peter
Kiley, James (Co-Chair)
Lerner, Norma
Luksenburg, Harvey
Mensah, George (Co-Chair)
Mishoe, Helena
Mondoro, Traci
Moore, Tim
Peprah, Emmanuel
Shero, Sue
Sopko, George
Sorlie, Paul
Stoney, Catherine
Tracy, Rachael
Wei, Gina
Werner, Elle

interactions create barriers to progress with consequential "failure of our research to reach full translation" [8].

To accelerate efforts to address these perennial challenges, CTRIS' mission is to function as a strategic focal point within NHLBI to catalyze opportunities for rigorous dissemination and implementation research to advance the creation, evaluation, reporting, dissemination, and sustained adoption of evidence-based strategies for the prevention and treatment of heart, lung, blood, and sleep disorders in clinical and public health practice settings. CTRIS is charged with integrating the domain expertise found in all NHLBI organizational units and leveraging NIH-wide investments in dissemination and implementation research to accomplish its mission.

CTRIS CHARGE AND MISSION

The center's primary charge is to serve as a catalyst in developing a robust, integrated, and coordinated research and training portfolio of observational and interventional dissemination and implementation research studies. The overall focus of these studies is to better understand and test multi-level processes while identifying which factors are critical for successful, sustained delivery of evidence-based interventions in real world clinical and public health settings. Implicit in this charge is the focus on the late phases of translational research, especially the "T4" phase [9, 10], that engages (rather than controlling for) the complexities of real-world settings and leads to generalizable knowledge to bridge the evidence-practice chasm. As part of this charge, CTRIS is expected to lead NHLBI's efforts in rigorous, systematic evidentiary reviews and subsequent NHLBI participation in the collaborative partnership model for developing evidence-based clinical practice guidelines in the prevention, treatment, and control of NHLBI-related diseases and risk factors [11]. CTRIS will also lead efforts for training and career development of investigators in T4 translation research and health inequities related to heart, lung, and blood diseases and sleep disorders, and provide periodic portfolio analysis to assess and inform future directions of implementation research programs at NHLBI. The scope of CTRIS activities will include domestic as well as global health research to meet the challenge of the emerging global crisis of non-communicable diseases in low-and middle-income countries [12].

Recognizing that increasing sustained adoption and adherence to evidence-based practices may improve the health of some populations while health inequities persist, NHLBI has charged CTRIS with leadership for research pertaining to health inequities. Other components of the mission of CTRIS include identifying best practices where health inequities have been significantly reduced or eliminated; supporting rigorous exploration of the key drivers of success; exploring strategies for effective dissemination, implementation, and scale-up of best practices; and providing opportunities for the scientific community to identify solutions to reduce or eliminate health inequities.

IMPORTANCE OF SOCIAL AND BEHAVIORAL SCIENCE RESEARCH

Behavior change at the level of all stakeholders is critical to address the evidence-practice chasm and maximize sustained adoption of evidence-based interventions. Rigorous social and behavioral science research is necessary to determine the need for change, the readiness to change, and effective strategies for initiating, supporting, and sustaining long-term behavior change at all levels. Thus, the active engagement of all investigators including behavioral and social science researchers in the design of studies to address compelling scientific questions and critical challenges in T4 translation research is not only critically needed but will inform better interventions and improved dissemination and implementation practices to address the evidence-practice gap and also help eliminate health inequities [13, 14].

FIRST YEAR ACTIVITIES AND FUNDING OPPORTUNITY ANNOUNCEMENTS

In its first year, CTRIS collaborated with other NHLBI organizational units, especially the Division of Cardiovascular Sciences, Division of Lung Diseases, Division of Blood Diseases and Resources, and the Division of Extramural Research Activities through trans-NHLBI working groups to identify opportunities for advancing T4 translation research in the priority areas of asthma, high blood pressure, and sickle cell disease. The goal was to identify common features that could constitute an ideal platform for catalyzing T4 translation research. Several funding opportunity announcements (FOAs) from these collaborations are shown below. Additional FOAs in sickle cell disease at the domestic US level and in sub-Saharan Africa, as well as another on strategies to increase the delivery of evidence-based care to reduce health inequities in heart, lung, blood, and sleep disorders are being developed.

1. RFA-HL-17-001

   Asthma empowerment collaborations to reduce childhood asthma disparities (U01)

   http://grants.nih.gov/grants/guide/rfa-files/RFA-HL-17-001.html
2. RFA-HL-15-028

   Creating asthma empowerment collaborations to reduce childhood asthma disparities (U34)

   http://grants.nih.gov/grants/guide/rfa-files/RFA-HL-15-028.html
3. RFA-HL-15-021

Testing multi-level interventions to improve blood pressure control in minority racial/ethnic, low socioeconomic status, and/or rural populations (UH2/UH3)

http://grants1.nih.gov/grants/guide/rfa-files/RFA-HL-15-021.html

4. RFA-HL-15-031

Research coordinating unit for testing multi-level interventions to improve blood pressure control in minority racial/ethnic, low socioeconomic status, and/or rural populations (U24)

http://grants1.nih.gov/grants/guide/rfa-files/RFA-HL-15-031.html

CTRIS also created a Think Tank Group for Global Health Research and another for Health Inequities Research, holding a meeting for each. These Think Tank Groups provide an opportunity to solicit scientific input from national and international experts including members of the NHLBI National Advisory Council and the Board of External Experts. Initial drafts of the summary statements from the sessions are available for public comment at

- http://www.nhlbi.nih.gov/research/reports/2014-global-health
- http://www.nhlbi.nih.gov/research/reports/2014-health-inequities

FUTURE RESEARCH AND SCIENTIFIC ENDEAVORS TO ENGAGE THE RESEARCH COMMUNITY

CTRIS is expected to stimulate and foster investigator-initiated observational and interventional implementation research that use rigorous methodological and analytic approaches within explicit theoretical or conceptual research frameworks to address heart, lung, blood, and sleep disorders. Future funding opportunity announcements under consideration include studies that use health systems platforms, novel big data approaches, federated data warehouse networks, patient-powered portals, and innovations in biomedical informatics and technologies to tackle the complexities of T4 translation research. Additionally, CTRIS is considering initiatives that explore ideal strategies for mobilizing social networks of empowered patients and communities to advance health promotion, disease prevention, and adherence to evidence-based health care recommendations.

Addressing the complexities of the T4 translation research in the future will also require an investigative team approach that prioritizes active collaborations between academic health center partners including experts from biomedical, social, and behavioral science domains and their affiliated Clinical Translational Science Award (CTSA) centers; public health agencies at the national, state, or local levels; major health plan investigators; and collaborators with expertise in systems science, computational modeling, emerging technologies, and big data analysis. Health care networks of safety-net hospitals and clinics providing care to underserved populations are of considerable interest as potential avenues of research for interventions to address health inequities. At the center of all of this effort will be patients and their families, and the perspectives from patient groups, community-based organizations, policymakers, and other stakeholders typically outside of the traditional academic-biomedical model.

Consistent with the NIH mission of engaging all stakeholders in turning discoveries into health, CTRIS encourages all interested parties to comment on its programs. We especially encourage comments on the Global Health and Health Inequities Think Tank summary statements. T4 translation research needs are numerous, as are those for global health and health inequities research. These will require prioritization, with help from the extramural research community. Specific topics may require the kind of detailed analysis that can be achieved only through expert working groups. CTRIS looks forward to active participation of the scientific community in conceptualizing and convening relevant working groups for this purpose.

Acknowledgments: We thank all CTRIS staff members and our colleagues Drs. Uchechukwu Sampson and Emmanuel Peprah who reviewed and contributed to an earlier version of the document.

Disclaimer: The views expressed in this article are those of the authors and do not necessarily represent the views of the National Heart, Lung, and Blood Institute, National Institutes of Health, or the U.S. Department of Health and Human Services.

Conflict of interest: None

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