Commentary

Advancing Health Equity and Biomedical Researcher Diversity: A New AIM-AHEAD Consortium

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ABSTRACT

Despite widespread knowledge regarding racial and ethnic health disparities, little has changed over the last decades. A creative, inclusive, and competitive biomedical research workforce is the foundation for turning discovery into health for all. To date, the expertise for advancing data-driven medicine based on artificial intelligence and machine learning (AI/ML) approaches has resided in majority-oriented institutions with little demonstrated experience in engaging minority-serving institutions or communities. Lack of diversity of both data and researchers runs the risk of creating and perpetuating harmful biases in the analytical algorithms, practice, and outcomes, thus fostering continued health disparities and inequities. Thus, the National Institutes of Health recently launched an Artificial Intelligence and Machine Learning Consortium to Advance Health Equity and Researcher Diversity (AIM-AHEAD) program. This two-year planning, assessment and capacity building program will be led by the AIM-AHEAD Coordinating Center comprised of a consortium of institutions and organizations that have a mission to serve minorities and underrepresented or underserved communities impacted by health disparities. This AIM-AHEAD research and development program seeks to illuminate underlying issues in health systems and research endeavors that need to be addressed to improve health for diverse communities.

KEYWORDS: Equity, AIM-AHEAD, Health, Diversity, Researcher

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Despite widespread knowledge regarding racial and ethnic health disparities, little has changed over the last 40 years. Similarly, consistent evidence documents the benefits of workforce diversity across multiple disciplines including science and healthcare. Yet, African Americans, Hispanics, American Indians/Alaskan Natives, and Native Hawaiians/Pacific Islanders, and other minorities, including rural populations and persons with disabilities, continue to receive higher degrees and academic appointments in science, technology, engineering and mathematics (i.e., STEM) at rates substantially lower than their representation in the US population. Recommendations from the Advisory Committee to the National Institutes of Health (NIH) Director Working Group on Diversity in the Biomedical Research Workforce emphasize evidence-based and theory-informed strategies to increase diversity in the biomedical and health professional workforce. A creative, inclusive, and competitive biomedical and behavioral research workforce is the foundation for turning discovery into health for all. Importantly, the widespread adoption of electronic health records (EHR) has ushered in a new age of data-driven medicine, with the emergence of novel methods such as artificial intelligence, machine learning (AI/ML), and reinforcement learning. These new methods hold promise to provide new insights, derived from patient and other data, to improve health outcomes. To date, the expertise and leadership for advancing AI/ML approaches has resided in majority-oriented institutions, led by faculty with little demonstrated experience or interest in engaging minority-serving institutions, investigators, or communities. Addressing this void requires transformative approaches that cannot be grounded in the same systems that have failed to generate solutions.

Therefore, a new Artificial Intelligence and Machine Learning Consortium to Advance Health Equity and Researcher Diversity (AIM-AHEAD) program was launched by the NIH on September 17, 2021. This program will establish mutually beneficial, coordinated, and trusted partnerships to enhance the participation and representation of researchers and communities currently underrepresented in the development of AI/ML models and improve the capabilities of this emerging technology, beginning with EHR and extending to other diverse data to address health disparities and inequities. The rapid increase in the volume of data generated through EHR and other biomedical research studies presents opportunities for developing new approaches for biomedical research and improving healthcare. Many challenges hinder the use of AI/ML technologies, such as the cost, capability for widespread operational and research application, and access to appropriate infrastructure, resources, and training. Additionally, lack of diversity of both data and researchers runs the risk of creating and perpetuating harmful biases in the analytical algorithms, practice, and outcomes, thus fostering continued health disparities and inequities. Many underrepresented and underserved communities, often disproportionately affected by diseases and health conditions, present untapped potential to contribute expertise, data, and strategies to inform the field on the most urgent research questions. But they lack funding, infrastructure, and training to apply AI/ML approaches to pertinent research questions.

The two-year planning, assessment and capacity building AIM-AHEAD award of $100 million will provide the much needed impetus to the cause. The University of North Texas Health Sciences Center at Fort Worth (UNTHSC) will lead the AIM-AHEAD Coordinating Center to execute this federal research and development program. The Coordinating Center is a consortium of institutions and organizations that have a mission to serve minorities and other under-represented or

underserved communities impacted by health disparities. The Coordinating Center is comprised of four main cores.

The Leadership/Administrative Core will be led by Jamboor K. Vishwanatha, Ph.D., and Harlan P. Jones, Ph.D., at UNTHSC along with a team of Principal Investigators to lead regional hubs: Bettina Beech, Dr.P.H., at University of Houston, Spero Manson, Ph.D., at University of Colorado-Anschutz Medical Center, Keith Norris, M.D., Ph.D., at University of California, Los Angeles, Anil Shanker, Ph.D., at Meharry Medical College, Herman Taylor, M.D., at Morehouse School of Medicine, and Roland J. Thorpe, Jr., Ph.D., at Johns Hopkins University. Toufeeq Ahmed, Ph.D., at Vanderbilt University Medical Center will lead the Communication and Dissemination hub. The Leadership Core will recruit consortium members and coordinate partnerships, stakeholder engagement, and outreach to enhance the diversity of researchers in AI/ML-related field, with emphasis on health disparities. The inclusion of Historically Black Colleges and Universities, and Asian American, Native American, Pacific Islander, and Hispanic serving institutions in the Leadership Core highlight commitment to minority interests.

The Leadership Core will also coordinate with three AIM-AHEAD technical cores of training, research, and infrastructure in executing this program. The Data Science Training Core will be led by Legand L. Burge, Ph.D., at Howard University. The training core will implement training opportunities in data science and health equity research, large scale data analysis and management, cloud computing, and other areas to increase AI/ML expertise. The Data and Research Core will be led by Jon Puro, M.P.A., at Oregon Community Health Information Network. The research core will determine and address research priorities and needs in linking and preparing multiple sources and types of research data to form an inclusive basis for AI/ML use cases that will inform on strategies and approaches to ameliorate health disparity. This may include facilitating the extraction and transformation of data from EHR, image data, social determinants of health data, and more to develop AI/ML algorithms for application to health equity research. The Infrastructure Core will be led by Alex J. Carlisle, Ph.D., at National Alliance Against Disparities in Patient Health, with co-leads Paul Avillach, M.D., Ph.D., at Harvard Medical School, and Bradley A. Malin, Ph.D., at Vanderbilt University Medical Center. The infrastructure core will enable a coordinated data and computing infrastructure that enhances the interoperability of large-scale data resources with data that are maintained and governed by individual institutions in an environment preserving privacy and autonomy.

Building a consortium of right partners and key stakeholders is paramount to planning, assessment and capacity building to advance health equity and researcher diversity. This transformative AIM-AHEAD program seeks to illuminate underlying issues in health systems and research endeavors that need to be addressed to improve health for diverse communities. As an outcome of this program, it is hoped that healthcare will encompass the spectrum of health and disease from prevention, diagnoses, treatments, and implementation strategies for all.

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