

# FOREWORD: NIMHD TRANSDISCIPLINARY COLLABORATIVE CENTERS FOR HEALTH DISPARITIES RESEARCH FOCUSED ON PRECISION MEDICINE

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The NIMHD Transdisciplinary Collaborative Centers for Health Disparities Research Focused on Precision Medicine (PM TCCs) comprise regional coalitions of research institutions and consortium partners focused on priority research topics in minority health and health disparities. In April 2016, NIMHD, in partnership with the National Human Genome Research Institute (NHGRI) and the National Cancer Institute (NCI), launched the PM TCC program to fund five centers across the United States to stimulate health disparities research with an emphasis on precision medicine to address one or more documented health disparities. The programs draw on expertise in genomics and other ‘omics, physiology and medicine, population health disparities, behavioral and social sciences, and the science of translation, implementation and dissemination. The TCC program’s overarching goal is to develop and disseminate effective interventions that can be implemented in real-world settings with the goal of promoting health equity and reducing health disparities. This special issue of *Ethnicity & Disease* is dedicated to cutting-edge research conducted by the five PM TCCs at the intersection between precision medicine and health disparities. Articles in this issue will enhance knowledge in a variety of research topics from perspectives on precision medicine among different health disparity populations to methods for reducing inequities in protocols, interventions, and health information and further efforts to promote inclusion of all populations, especially the most vulnerable.

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## PRECISION MEDICINE AND DISPARITIES

While rapid advances in new technologies in genomic sequencing and clinical medicine have advanced the lives of some, the health benefits are not always distributed equitably, often because of structural and systemic factors that limit the application or effectiveness of new diagnostic tools or therapeutic approaches. In January 2015, President Obama unveiled the Precision Medicine Initiative—a bold new enterprise to revolutionize medicine and generate the scientific evidence needed to move the concept of precision medicine into every day clinical practice, with the focus on tailored therapies for individual patients. While precision medicine promises improving patient care for most people, its potential for improving minority health and reducing health disparities is unclear. If applied inequitably, precision medicine technologies and approaches have the potential to actually worsen population disparities. Furthermore, for many clinical problems a standard approach has worked well, and the additional benefit of precision medicine needs to be demonstrated before being implemented. New

technology, diagnostics and therapies not only need to be more effective than existing ones but the additional burden of cost to the patients and the system need to be considered.

The one-size-fits all approach in large-scale untargeted public health or clinical interventions such as vaccinations, tobacco use prevention, blood pressure control, and cancer screening, have improved population health and reduced disparities, but substantial gaps in many areas persist. Potential strategies for mitigating overall risk, further improving health outcomes and reducing health disparities require integration of social determinants of health with greater understanding of the dynamic interplay between biological, behavioral, social and environmental health risk and protective factors experienced across the life course, and inclusion of health disparity populations in research aimed at developing precision medicine or precision health interventions. Successful implementation of precision medicine strategies in underserved and disadvantaged populations requires engaging affected communities, collaboration across scientific disciplines, and multidisciplinary teams of community and academic and public health experts from

diverse backgrounds to conduct research in minority health and health disparities with a focus on precision medicine and precision public health.

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ties, behavioral and social sciences, and the science of translation, implementation and dissemination. The TCC program's overarching goal is to develop and disseminate effective interventions that can be implemented in real-world settings to achieve the vision of promoting health equity and reducing health disparities.

NIMHD's PM TCC initiative seeks to provide opportunities for the discovery of experimental results that would have a direct impact on improving disease burden among health disparity populations and improve access to healthy environments for vulnerable populations.

With a focus on NIH-designated health disparities populations, which include Blacks or African Americans, Hispanics or Latinos, American Indians and Alaska Natives, Asian Americans, Native Hawaiians and other Pacific Islanders, socioeconomically disadvantaged populations, rural populations, and sexual and gender minorities, the PM TCCs are exploring innovative research in the following areas.

### Data Integration

Development of new tools and analytic methods for integrating patient data with information about contextual factors acting at the community or population level to influence health;

### Population Differences in Pharmaceutical Therapy Outcomes

Development of pharmacogenomic and other precision medicine tools to identify critical biomarkers for disease progression and drug responses in diverse populations;

### Translating Pharmacogenomics Discoveries to Health Disparity Populations

Translation of pharmacogenomic discoveries into effective treatment or clinical practice;

### Implementation Research

Investigation of facilitators and barriers to implementing precision medicine approaches in disadvantaged populations.

### CONCLUSION

This special issue of *Ethnicity & Disease* is dedicated to cutting-edge research conducted by the five PM TCCs at the intersection between precision medicine and health disparities. Articles in this issue will enhance knowledge in a variety of research topics from community perspectives on precision medicine among different health disparity populations to methods for reducing inequities in protocols, interventions, and health information and to advance efforts to promote inclusion to all populations, especially the most vulnerable.

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