

BWH-Led Tuberculosis Research Project Receives \$14 Million NIH Grant

Team works to better understand drug resistant tuberculosis

Boston, MA – Researchers at Brigham and Women’s Hospital (BWH), Harvard School of Public Health (HSPH), Harvard Medical School (HMS) and Partners In Health (PIH) have received a grant of \$14 million over five years from the National Institutes of Health to study multidrug-resistant tuberculosis (MDR-TB) and extensively drug resistant tuberculosis (XDR-TB). The goal of the project is to better understand the development and transmission of drug resistant tuberculosis and to identify practical approaches to reduce the public health burden created by this disease.

“More than two million people worldwide die from tuberculosis each year,” said Megan Murray, MD, ScD, the project Principal Investigator and an infectious disease physician and epidemiologist in the Division of Social Medicine and Health Inequalities at BWH and at HSPH. “Treatment of drug resistant strains of tuberculosis is not only more costly than treatment of drug sensitive strains, but it is also more complex and therefore less likely to be successful. For all these reasons, growth in the incidence of drug resistant tuberculosis poses a very real threat to tuberculosis control programs.”

Rates of MDR-TB and XDR-TB, and the accompanying costs of expensive second-line drug therapies, have increased over the past decade, creating a significant impact on individual patients, vulnerable communities, and tuberculosis control programs. While inadequate TB control is certainly the primary factor in this growth, much more information about the evolution of these strains, how they are transmitted, and which approaches are most effective to control their spread is critical to efforts to stem future growth.

The grant will support three projects co-led by Murray; Mercedes Becerra, ScD, HMS assistant professor and epidemiologist at BWH; Paul Farmer, MD, PhD, HMS and BWH professor and founder of Partners In Health; and Lucila Ohno-Machado, MD, PhD, MHA, associate professor of Radiology at BWH and HMS.

The grant will fund three interconnected research projects that will comprehensively approach the challenge of understanding and addressing the global threat of MDR and XDR tuberculosis. The first project will involve a large field study to generate data on the microbial and host determinants of transmission of drug sensitive and drug resistant tuberculosis and will also develop an archive of MDR and XDR tuberculosis strains. This study will be conducted in Peru, in collaboration with *Socios en Salud*, the Peruvian affiliate of Partners In Health, which has extensive experience in the treatment and study of drug resistant tuberculosis in that country. The second project examines the archived strains for genetic and metabolic causes of strain diversity, and the third project uses field and lab data to develop mathematical models of tuberculosis transmission and the effect of interventions and to create prediction models to guide drug regimens in the future.

“The growth of MDR and XDR-TB highlights a global failure to prevent and treat basic TB. This research will be critically important to understanding the full consequences of this failure and halting the further growth of drug resistant strains,” said Paul Farmer, MD, PhD.