Commonwealth Medicine Reference Laboratory Supports International Public Health Efforts

Tuberculosis (TB) is one of the most pervasive and deadly diseases in the world. Commonly affecting the lungs, it is spread like the common cold—through the air when people with the active respiratory disease cough, sneeze or talk. According to the World Health Organization (WHO), roughly one-third of the world’s population is infected with the TB bacilli, *Mycobacterium tuberculosis*, and approximately five to 10 percent of those infected become sick at some time during their life. Each year more than two million people worldwide die from active TB, which is stubbornly resistant to treatment and the leading cause of death among people with HIV/AIDS.

Supporting the need to diagnose TB worldwide is the Supranational TB Reference Laboratory Network, an international collaboration of 26 such laboratories established by WHO in 1996. These labs provide technical assistance and support for establishing quality assured diagnostics in countries most burdened by this disease, enabling them to collect reliable data on the incidence and prevalence of drug resistant TB. The Massachusetts Supranational TB Reference Laboratory (MSRL), whose research is administered by UMass Medical School through a partnership established in 2006 between Commonwealth Medicine (CWM) and the Massachusetts Department of Public Health, was among the first labs selected for this network.

An early initiative for the lab centered on the development of laboratory infrastructure and interim laboratory support services in Peru. Today, Peru’s national laboratory is performing its own testing and surveillance with external quality support from MSRL, and is a candidate to become a supranational TB reference laboratory. “Everything begins with quality. To successfully transfer knowledge and technology, you must implement corresponding quality assurance and quality control measures,” said MSRL Director Alexander Sloutsky, PhD, assistant professor of medicine and molecular genetics & microbiology at UMMS.

The positive outcome in Peru set the stage for MSRL to assist other countries burdened with TB. In 2008, the lab agreed to provide long-term technical assistance and support for developing diagnostic and surveillance capacity at the National Public Health Laboratory in Haiti, where the estimated incidence and prevalence of TB is among the highest in the Western Hemisphere, and where HIV/AIDS is also widespread. “HIV and TB form a lethal combination, each speeding the other’s progress,” said CWM Reference Laboratory Director Martin Baker, MS. “This is driving the basic science efforts that Dr. Sloutsky is working on.”

Rounding out the team is Project Medical Director Onesky Aupont, MD, MPH, PhD, MA, associate professor of pediatrics at UMMS, and Research Assistant Samanta Descombes, both from Haiti, and Laboratory Supervisor Steven Denkin, PhD. Descombes is a participant in the CWM Associates Program, which was designed to provide opportunities for graduates of public Massachusetts community colleges, state colleges and universities, as well as institutions affiliated with UMass Medical School, to develop critical skills and experience while working with experts in CWM’s many academic, research and public service programs. A graduate of the College of the Holy Cross in Worcester with a Bachelor of Arts degree in French and concentration in Africana Studies and pre-medicine, Descombes is planning to pursue a career in medicine.

In Haiti, a national external quality assurance project for Acid Fast Bacilli (AFB) smear microscopy, a technique that has diagnosed 70 percent of all TB cases in developing countries, has been implemented. This will establish a baseline assessment of current diagnostic capacity and serve as an assessment of technology and infrastructure needs. MSRL will manage and provide training for the diagnostic testing, surveillance and quality assurance functions and eventually transfer management of the operations to the national lab. “We’ll become an external quality assurance provider, rechecking diagnostics, conducting proficiency exercises and providing advisory support as new issues arise,” said Baker. Based on the groundwork established in Peru and Haiti, WHO has expressed an interest in having MSRL conduct similar endeavors in other countries dealing with this international health issue.