The 1989 Strategic Plan for the Elimination of TB in the United States set a goal of reducing tuberculosis (TB) to 1 new case per million by 2010. However, in the mid-1980s, after elimination of categorical federal funding for state TB programs and the onset of the HIV epidemic, the trend toward TB elimination was reversed, and more deadly drug-resistant strains emerged. TB cases increased 20% between 1985 and 1992. In 2007, there were 4.4 new TB cases per 100,000 population—far above the 2010 goal of 1.0 per 100,000—and the total number of new cases of drug-resistant TB reached 754.

Drug-resistance data, said Escuyer, are “precious information” as they have a profound impact on treatment decisions and on the state’s TB prevention and control activities.

The traditional method for identifying drug-resistant TB—still considered the gold standard—is to grow the bacteria in the presence of a particular drug. This, said Escuyer, takes time: “It can easily go up to a month or more.”

While awaiting test results, physicians typically start patients on the standard TB therapy, including the first-line drugs rifampin and isoniazid. If it turns out the patient has MDR- or XDR-TB, the treatment will have had no impact on disease progression, since the strains are impervious to these drugs.

Escuyer and colleagues are crafting a shortcut, at least for rifampin-resistant strains.

More than 95% of rifampin-resistant TB strains have mutations in a specific region of one particular gene. The Wadsworth scientists are developing a molecular assay that can identify these mutations in TB bacteria directly from the primary patient specimen, usually sputum, without having to cultivate the bacteria.

The goal is to deliver test results within 48 hours of specimen submittal. According to Escuyer, the shortened timeline will be “a huge gain for the patient, for the physician and for public health.”

Escuyer’s mycobacteriology laboratory systematically conducts drug-resistance testing on every TB specimen collected in the state of New York. Test results are released electronically in near real-time using a laboratory information management system.
developed in-house. The data can be retrieved by healthcare providers and by state epidemiologists using their separate, non-standardized electronic data access systems.

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Improperly treated TB is essentially untreated TB. The disease can have serious health consequences for individual patients and those they expose. While public health authorities have a vested interest in curbing the spread of all TB, they are especially concerned about containing the more lethal and clinically problematic drug-resistant strains.

Public health laboratory data in the right hands at the right time constitute a powerful tool for those working to finally eliminate TB in the United States.

**Contact**

For more information, contact Peter Kyriacopoulos, director of public policy, 240.485.2766, peter.kyriacopoulos@aphl.org.