Whole Genome Sequencing (WGS): New Lab Technology Helps Fight an Old Disease

Why is WGS Useful to Tuberculosis Programs?

By comparing the Mtb DNA from different patients, WGS allows health officials to find and investigate the spread of TB.

This information can help public health officials better respond to TB outbreaks.

WGS is a Significant Scientific Advancement

Conventional genotyping methods examine less than 1% of the genome.

Whole genome sequencing can examine more than 90% of the genome.

Mapping Related TB Cases

Conventional Genotyping Methods

A cluster of TB cases can be indistinguishable by conventional methods.

WGS Process

Phylogenetic Map after WGS

A phylogenetic map of TB cases may distinguish between different clusters.

CDC Uses WGS to Inform TB Prevention and Response Strategies

CDC’s TB Laboratory is a leader in use of WGS for cluster detection to identify potential outbreaks and for surveillance of drug resistance.

CDC funds the National TB Molecular Surveillance Center (NTMSC) that provides WGS results for Mtb samples received from all newly diagnosed patients in the United States. NTMSC is part of the Antibiotic Resistance Laboratory Network.

CDC has supported WGS for 500+ TB clusters in the U.S. since 2012.

The number of TB cases in each of these clusters ranges from 2 to 182.