CDC's Molecular Detection of Drug Resistance Service:

Rapid Test Results for Real-Time Patient Care

CDC's MDDR service tests TB samples from across the country to rapidly detect MDR TB and other types of resistance by looking for genetic changes.

Why is CDC's MDDR Service Important?

The *Mycobacterium tuberculosis* organism grows slowly, which means it can take weeks to months to get test results when growing a sample in the lab. The MDDR service can provide molecular test results in days. These results are used to decide the best treatment regimens for patients.

Rapid detection of DR TB saves lives and money.

Earlier initiation of effective therapy:

- Improves patient outcomes.
- Can reduce periods of infectiousness of MDR TB cases.

Glossary

DR: Drug resistance/resistant

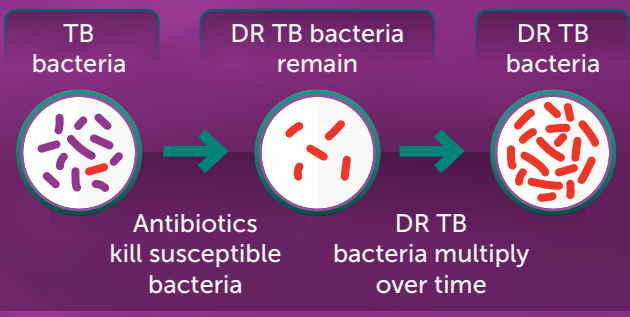
MDDR: Molecular detection of drug resistance

MDR: Multidrug resistance/resistant

TB: Tuberculosis

How Drug Resistance Develops

Changes in DNA can cause TB bacteria to become resistant to treatments. Even one change in the right location in a DNA sequence can lead to DR.



CDC Assists TB Programs

with their most complicated drug resistant cases that can be difficult to treat or with difficult-to-test samples, such as those that are contaminated or do not grow.

MDDR is the only national service available **free of charge** to all U.S. TB programs. It is housed at CDC.

In 10 years, **over 5400** samples have been tested through this service including testing for almost all MDR TB cases reported each year.

Case Study

DAY 0 — Specimen collected

DAY 1 & 2 — Diagnosed with DR TB

A state laboratory detected DR TB in a college student indicating resistance to the most important first-line anti-TB drug.

DAY 3 — CDC MDDR (TCG>TTG)

The state laboratory sent the sample to CDC's MDDR Service. CDC covered all costs.

DAY 4 — CDC Sample

CDC received the sample.

DAY 6 — Effective Treatment

Results: Patient had MDR TB with resistance to 3 other drugs. This knowledge helped the clinician decide on treatment options.

DAY 41 — Results (MDR TB +3)

CDC also provided growth-based drug susceptibility test results.

CDC Laboratories in Action

CDC