# 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.

> TB bacteria

DR TB bacteria remain

**DR TB** bacteria









**Antibiotics** kill susceptible bacteria

DR TB bacteria multiply over time

### **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. Since 2009,

samples have been tested through this service including testing for almost all MDR TB cases reported each year.



DAY 182

DAY 0



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

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



DAY 3

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

DAY 4



CDC received the sample.

**0**0

DAY 6

**DAY 41** 



CDC also provided growth-based drug susceptibility test results.



