Experience with GeneXpert MTB/ RIF in a Low Incidence State

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Alabama
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Alabama has Lots of ...
And Plenty of TB
BUT Not Much Rifampin Resistance

Rifampin Resistant Cases in Alabama

2001-2014
Case Study

- Female College Student from Nigeria
- Freshman with clear x-ray from August, 2013
- Father died of mysterious illness
October 8, 2013

- Smear is Numerous (4+).
- NAAT+ by GeneXpert MTB/ RIF
- Rifampin Resistant by GeneXpert
MDDR & DST

- **10-9** Sent to CDC for MDDR.

- **10-15** CDC results showed INH, Rifampin, Ethambutol and Ofloxacin mutations.

- **10-22** Direct Agar Proportion DST showed resistance to INH, Rifampin, Ethambutol, Ofloxacin, and low dilution of Streptomycin.

- **11-4** Sent to National Jewish Health for Linezolid and Moxifloxacin in DST.
Further Testing

- **11-5** Indirect Agar Proportion DST showed resistance to INH, Rifampin, Ethambutol, Ofloxacin, and low dilution of Streptomycin.

- **11-14** CDC Indirect Agar Proportion DST showed resistance to INH, Rifampin, Ethambutol, Ciprofloxacin, and Ofloxacin.

- **11-15** National Jewish Health results showed resistance to Moxifloxacin.

- **4-9-14** Sent to FL for MIC’s
DST Results

Resistant
- INH
- Rifampin/ Rifabutin
- Ethambutol
- All Fluoroquinolones
- Low level Streptomycin

Sensitive
- PZA
- Ethionamide
- Kanamycin
- Amikacin
- Capreomycin
- PAS
- Cycloserine
MDR or XDR?

This patient met the criteria of being resistant to:

• First line drugs of INH and Rifampin

• Resistant to all fluoroquinolones

• **BUT** was sensitive to the injectables (Amikacin, Capreomycin, Kanamycin)
The answer is:

MDR

Pre-XDR
More

- Lived in a Dormitory.
- Attended a small church.
- Had a group of friends from Nigeria.
Contact Study

- T-Spot was utilized.
- 592 were tested.
- 13 were positive.
The Rest of the Story

- All 13 TBI were treated successfully with Linezolid.

- Case was closed January 23, 2015.

- In March 2015 the patient developed “cold-like” symptoms.
Spring 2015

- **3-13** Smear negative X 4
- **3-13** GeneXpert X 2 / Both negative
- **4-1** Growth of TB on the four cultures ranged from one colony to 1+
- **4-2** Sent to CDC for MDDR and DST
DST Results

- **4-6** MDDR results showed INH, Rifampin, Ethambutol, PZA and Ofloxacin mutations.

- **5-1** Indirect Agar Proportion DST showed INH, Rifampin, Ethambutol, Ofloxacin, and Streptomycin, and PZA resistance.

- **5-6** CDC DST results showed INH, Rifampin, Ethambutol, PZA, Ciprofloxacin and Ofloxacin resistance.

- **5-21** Sent to National Jewish Health for TB DST testing.
Current DST Results

Resistant
- INH
- Rifampin/ Rifabutin
- Ethambutol
- All Fluoroquinolones
- Streptomycin
- PZA

Sensitive
- Ethionamide
- Kanamycin
- Amikacin
- Capreomycin
- PAS
- Cycloserine
Current Therapy

- Imipenem
- Capreomycin
- PAS
- Bedaquiline
- Cycloserine
- Ethionamide
- Linezolid
Lessons Learned

- Rifampin resistance is a possible indication of an MDR/XDR case.
- All screening must be done in the US.
- The end of treatment is not always easy to determine.
Questions?

TB or not TB?

Alabama Shakespeare Festival in Montgomery