



**TEXAS**  
Health and Human  
Services

**Texas Department of State  
Health Services**

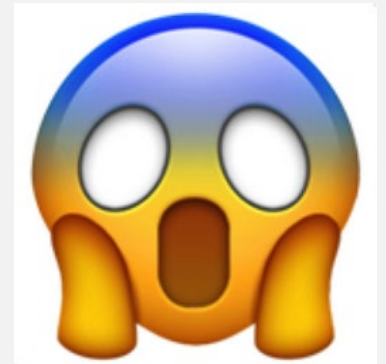
# A Mother with MDR and Her Newborn

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# Friday after Thanksgiving call....

- Call from a pediatrician at a children's hospital
- There is an 8-day-old baby in the hospital whose mama has rifampin-resistant TB
- The baby looks great
- What should they do?



# Some Information on the Mama

- 23-year-old woman from India (immigrated 4 years ago)
- She has had a cough for 1 year, multiple rounds of unknown antibiotics
- Delivered a healthy baby boy 8 days ago. Uneventful pregnancy, currently breastfeeding
- Mama is now having fevers, was told to go to the ED by her provider



# ED Evaluation

- CXR and CT chest showed cavities
- Sputum was collected for routine culture as well as AFB smear/culture and she was sent home on treatment for community acquired pneumonia
- The sputum resulted 4+ AFB smear positive and an Xpert showed Mtb/rifampin resistance.....



# CXR in ED



# We need to....

- Treat the mama with something
- Treat the baby with something
- Get information on the organism fast so we can treat the baby and the mama with something
- Recommendation: get the organism to the state lab NOW.....please



# Concerns (there are many)

- Rifampin resistant disease. There is no way we are going to 'guess' what she is susceptible to.
- This is a new mom with a new baby, it is so important to get this right for both of them
- The baby has had close exposure, several times a day for 8 days, something needs to be done to protect him
- How long are we going to separate this mom from her breastfeeding baby?



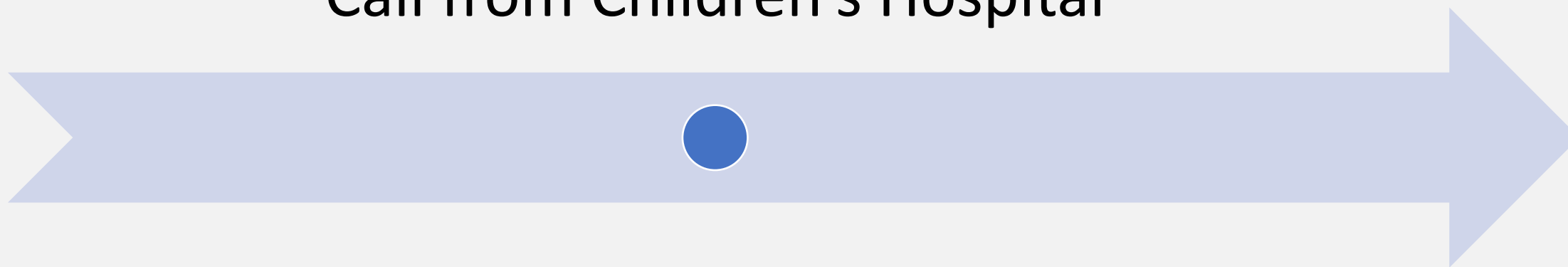


# Timeline for 11/30/20



8:30

Call from Children's Hospital



# Timeline for 11/30/20

8:30

Call from Children's Hospital



# Timeline for 11/30/20

8:30

Call from Children's Hospital

11:15

Mother's hospital has no  
leftover processed sediment  
from 11/22 collection



# Timeline for 11/30/20

8:30

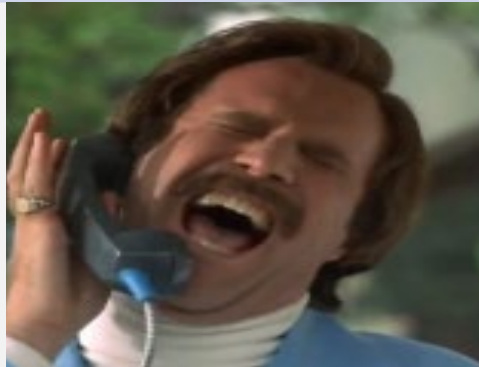
Call from Children's  
Hospital

11:15

Mother's hospital has  
no leftover processed  
sediment from 11/22  
collection

1:30

Found sediment!



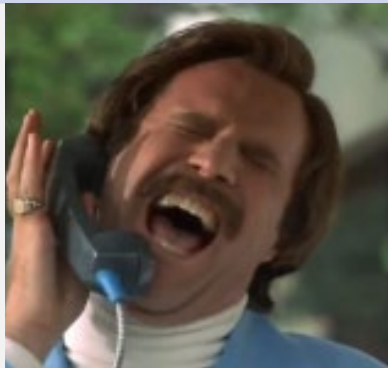
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8:30  
Call from  
Children's Hospital

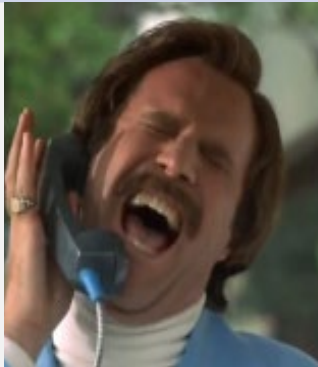
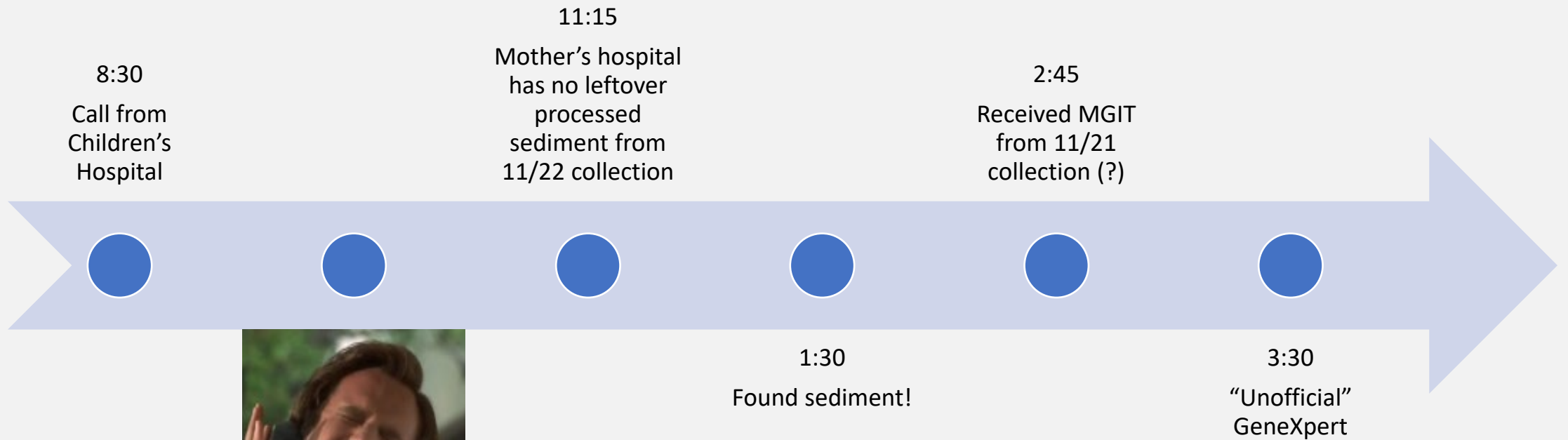
11:15  
Mother's hospital  
has no leftover  
processed  
sediment from  
11/22 collection

2:45  
Received MGIT  
from 11/21  
collection (?)

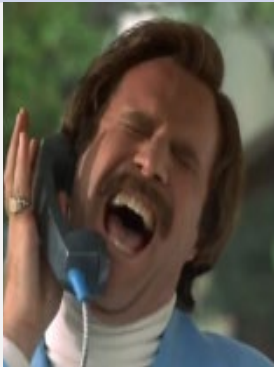
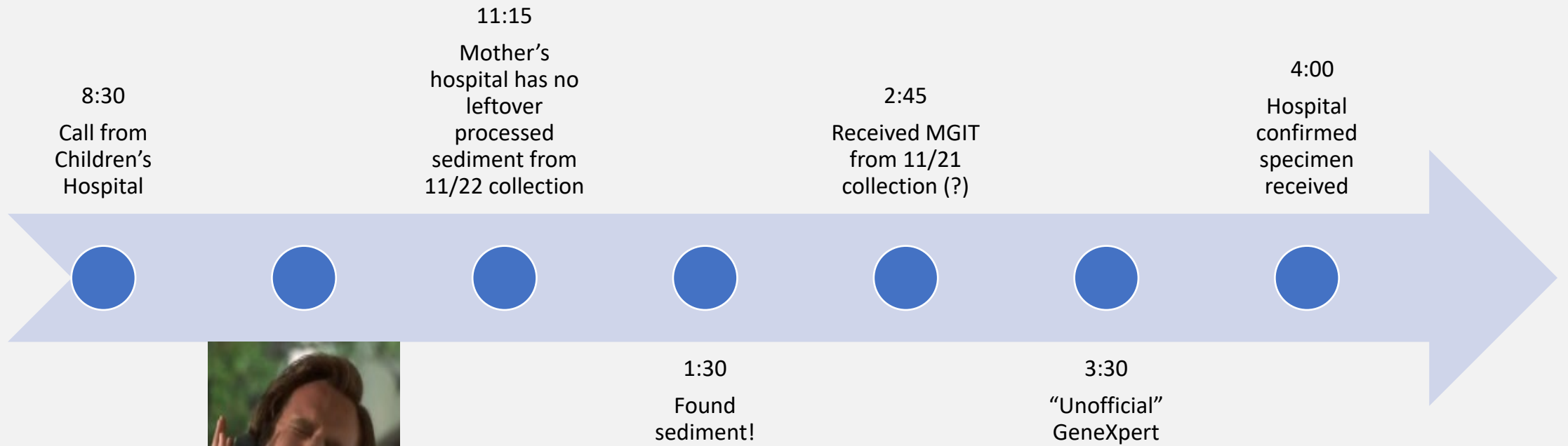
1:30  
Found sediment!



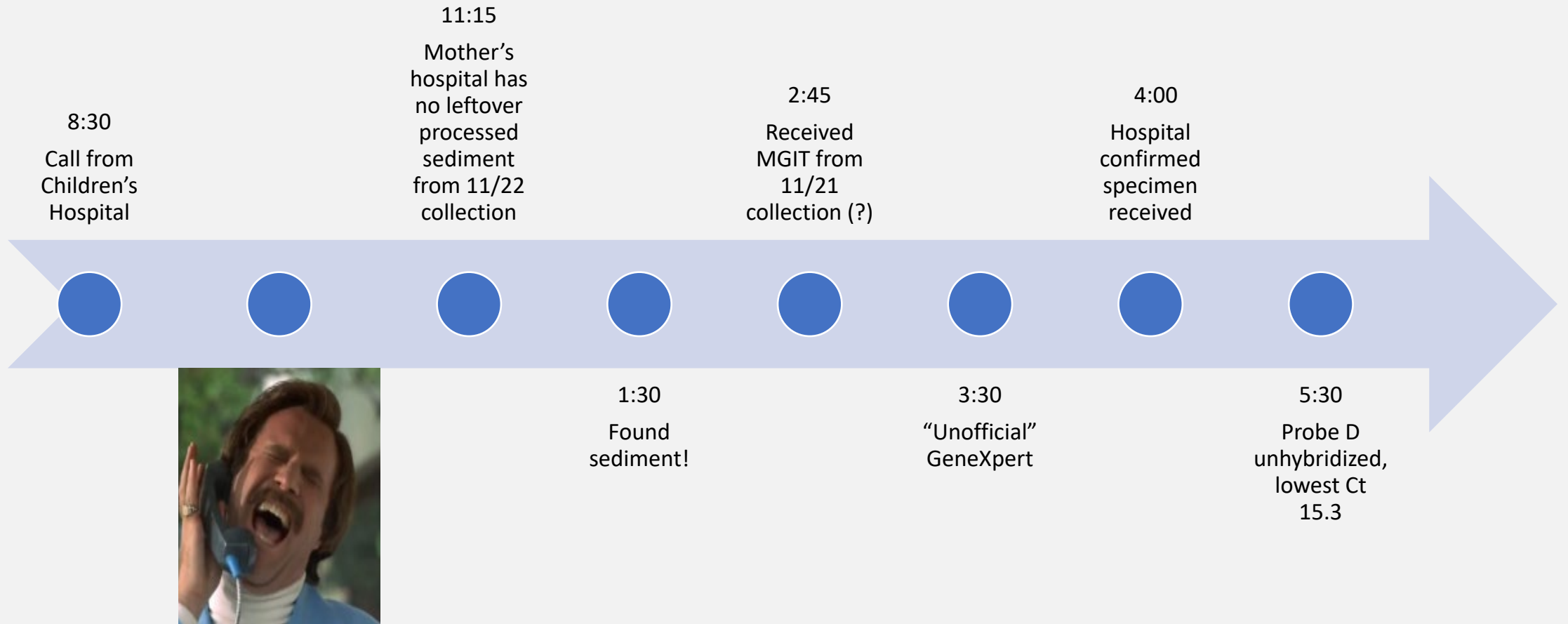
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# MDDR and DST



- 12/1/20
  - Sent isolate to CDC

# MDDR and DST

- 12/1/20
  - Sent isolate to CDC
- 12/8/20
  - Received Sanger sequencing report

Date Collected: 11/21/2020		Austin, TX 78714-9347	
Date Received: 12/03/2020			
Date Reported: 12/08/2020			
Results for Molecular Detection of Drug Resistance (Complete Panel); Conventional Drug Susceptibility Test in progress.			
Drug	Locus *	Result	Interpretation
Rifampin	rpoB	Mutation: CAC>TAC; His526Tyr	Rifampin resistant. (100% of isolates in our in-house evaluation of 550 clinical isolates with this mutation are RMP-R.)
Isoniazid	inhA	Mutation: C-15T	Isoniazid resistant. (100% of isolates in our in-house evaluation of 550 clinical isolates with either of these mutations are INH-R.)
	katG	Mutation: AGC>ACC; Ser315Thr	
	fabG1	No mutation	
Ethambutol	embB	Mutation: GAG>GAC; Glu405Asp	Effect of this mutation on ethambutol resistance is unknown. Cannot rule out ethambutol resistance.
Pyrazinamide	pncA	Mutation: GGA>GAA; Gly108Glu	Effect of this mutation on pyrazinamide resistance is unknown. Cannot rule out PZA resistance.
Fluoroquinolones	gyrA	No mutation	Cannot rule out fluoroquinolone resistance. (80% of FQ-R isolates in our in-house evaluation of 550 clinical isolates have a mutation at locus gyrA.)
	gyrB	No mutation	
Second Line Injectables	rrs	No mutation	Cannot rule out resistance to injectable drugs (kanamycin, capreomycin, amikacin). (in our in-house evaluation of 550 clinical isolates: <ul style="list-style-type: none"> <li>• 91% of AMK-R isolates have a mutation in the rrs locus;</li> <li>• 87% of KAN-R isolates have a mutation in either the rrs locus or the eis locus;</li> <li>• 55% of CAP-R isolates have a mutation in either the rrs locus or the tyA locus.)</li> </ul>
	eis	No mutation	
	tyA	No mutation	

\*A negative result (No mutation) does not rule out resistance.

# MDDR and DST

- 12/1/20
  - Sent isolate to CDC
- 12/8/20
  - Received Sanger sequencing report
- 12/16/20
  - Conventional DSHS susceptibilities

Test	Result
Isoniazid 0.2 mcg/ml by Agar Proportion	<b>Resistant</b>
Note: MEDICAL EMERGENCY: This patient is resistant to one or more drugs. Notify responsible physician and Infection Control prior to filing this report.	
Rifampin 1.0 mcg/ml by Agar Proportion	<b>Resistant</b>
Pyrazinamide 100 mcg/ml by MGIT 960	<b>Resistant</b>
Ethambutol 5.0 mcg/ml by Agar Proportion	<b>Resistant</b>
Isoniazid 1.0 mcg/ml by Agar Proportion	<b>Resistant</b>
Ethionamide 5.0 mcg/ml by Agar Proportion	<b>Resistant</b>
Streptomycin 2.0 mcg/ml by Agar Proportion	<b>Resistant</b>
Ofloxacin 2.0 mcg/ml by Agar Proportion	Susceptible
Rifabutin 2.0 mcg/ml by Agar Proportion	<b>Resistant</b>
Kanamycin 5.0 mcg/ml by Agar Proportion	Susceptible
Capreomycin 10.0 mcg/ml by Agar Proportion	Susceptible

# MDDR and DST

- 12/1/20
  - Sent isolate to CDC
- 12/8/20
  - Received Sanger sequencing report
- 12/16/20
  - Conventional DSHS susceptibilities
- 1/4/21
  - Conventional CDC susceptibilities

<b>MTBC Agar Proportion Susceptibility*</b>	<b><u>% Resistant</u></b>	<b><u>Interpretation</u></b>
Isoniazid 0.2 µg/mL	100 %	Resistant
Isoniazid 1.0 µg/mL	100 %	Resistant
Isoniazid 5.0 µg/mL	100 %	Resistant
Rifampin 1.0 µg/mL	100 %	Resistant
Ethambutol 5.0 µg/mL	25 %	Resistant
Streptomycin 2.0 µg/mL	100 %	Resistant
Streptomycin 10.0 µg/mL	100 %	Resistant
Rifabutin 2.0 µg/mL	50 %	Resistant
Ciprofloxacin 2.0 µg/mL	0 %	Susceptible
Kanamycin 5.0 µg/mL	0 %	Susceptible
Ethionamide 10.0 µg/mL	100 %	Resistant
Capreomycin 10.0 µg/mL	0 %	Susceptible
PAS 2.0 µg/mL	0 %	Susceptible
Ofloxacin 2.0 µg/mL	0 %	Susceptible
Amikacin 4.0 µg/mL	0 %	Susceptible

**Comments and Disclaimers**

\* Susceptibility testing method: Indirect agar proportion, 7H10 medium. Resistance is defined as >1% (growth on drug-containing medium compared to drug-free medium).

**MTBC Pyrazinamide Susceptibility\***

	<b><u>Result</u></b>
Pyrazinamide 100 µg/mL	Resistant

**Comments and Disclaimers**

\* Susceptibility testing method: Mycobacteria Growth Indicator Tube (MGIT)

# Getting the ball rolling

- Baby was started on levofloxacin and high-dose INH initially. Once the MDDR returned, INH was stopped
- Mom was transferred to the Texas Center for Infectious Diseases and started on
  - Bedaquiline
  - Moxifloxacin
  - Linezolid
  - Clofazimine
  - Cycloserine



# Outcomes

- Mom stayed at TCID for 2 weeks, went home on a pass and did not return
  - Knowing the baby was on a medication that was protecting him was HUGE
- She continued to breastfeed (after some calls to South Africa regarding infant safety)
- Mama completes treatment this week
- Baby received 6 months of levofloxacin and tested negative by TST. He is a happy, healthy toddler



# Thank you!

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