## National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention Division of TB Elimination



# 2020 Report of Verified Case of Tuberculosis Training: Case Studies

**November 4, 2020** 

#### Case Studies on New 2020 RVCT Items

- Census tract
- Race
- Country of usual residence
- Initial reason evaluated for TB
- Occupation and industry
- Cigarette smoking status

- Lived outside US for >2 months
- Previous latent tuberculosis infection (LTBI) diagnosis
- Date of illness onset
- Binational case

	Demographics and Initial Evaluation	
Unchanged	6. Reporting Address a. City:	
Unchanged	b. <u>Is the Patient's Residence within City Limits</u> ?YesNo	
Unchanged	Unknown c. County:	
Unchanged	d. ZIP Code:	
New part	e. Census Tract (11-digit GEOID):	
Unchanged	7. Date of Birth:	

# Q6 Reporting Address Case Study: Adam

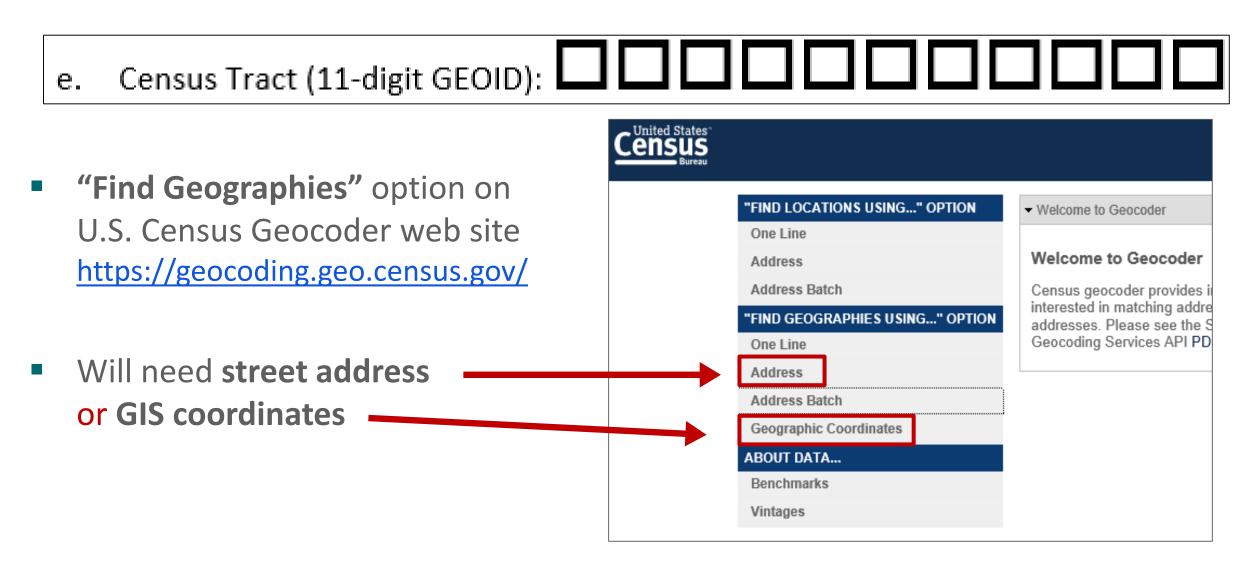
- Adam is an epidemiologist who works for CDC
- He lives at 1600 Clifton Rd NE, Atlanta, GA 30329-4018
  - DeKalb County

### Q6 Case Study: Adam, continued

How should you complete parts a-d for item 6 on the RVCT for Adam?

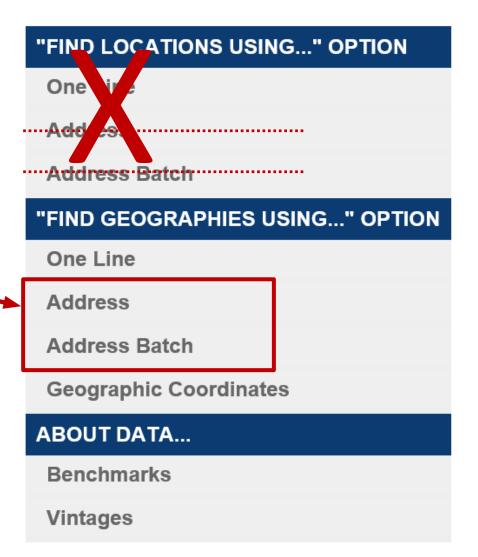
6.	Repo	orting Address	
	a.	City:	
	b.	Is the Patient's Residence within City Limits?YesNoUnknown	
	c.	County:	
	d.	ZIP Code:	How to complete
	e.	Census Tract (11-digit GEOID):	part e. GEOID covered next

# Q6: Reporting Address Census Tract GEOID available at U.S. Census Geocoder



#### **GEOID** troubleshooting tip 1 of 3

Be sure to choose Address under FIND GEOGRAPHIES, (not under Find Locations)



#### **GEOID** troubleshooting tip 2 of 3

- Be sure to choose Address under Find Geographies, (not under Find Locations)
- 2. Be sure you're looking at Census Tracts (11 digits), which is toward the bottom, [not Census Block (15 digits)], which appears first

2010 Census Blocks:

SUF XIX:

GEOID: 130890224022005

CENTLAT: +33.8036377

**BLOCK: 2005** 

AREAWATER: 0

STATE: 13

Census Tracts:

GEOID: 13089022404

CENTLAT: +33.7965677

AREAWATER: 16247

STATE: 13

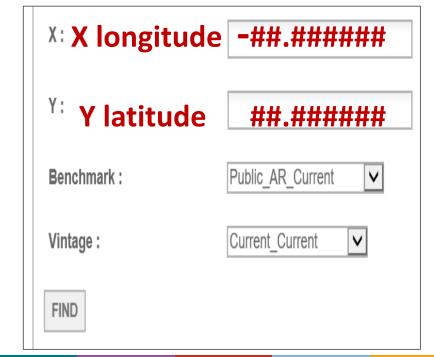
#### **GEOID** troubleshooting tip 3 of 3

- 1. Be sure to choose Address under Find Geographies, not under Find Locations
- 2. Be sure you're looking at Census Tract (11 digits), which is toward the bottom, not Census Block (15 digits), which appears first
- 3. If using GIS coordinates, be sure to list X followed by Y

Google Maps gives you



But you need to enter



### Q6e Case Study: Adam, correct complete answer

e. Census Tract (11-digit GEOID):

6.		orting Address
	a.	City:Atlanta
	b.	Is the Patient's Residence within City Limits?
		_X_Yes
		No
		Unknown
	c.	County: DeKalb
	d.	ZIP Code: 3 0 3 2 9 - 4 1 0 8

# Q9 and Q10 Ethnicity and Race Case Study: Susy

- Susy, a teacher, is diagnosed with TB disease
- When you ask her race and ethnicity, she says she is "multiracial" because her father is an American Indian from Arizona and her mother is Cuban
- You provide a list of standard race categories and tell her she can select as many she thinks is appropriate
  - Susy responds that she is "multiracial" because she is American Indian/Alaska Native and White

# Q9 and Q10 Ethnicity and Race Case Study: Susy

- Next, you ask if she considers herself Hispanic or Latino
  - Susy says, "I consider myself part Hispanic"

#### Q9 and Q10 Ethnicity and Race: Susy, continued

How should you complete items 9 and 10 on the RVCT for Susy?

		1
9.	<u>Ethnicity</u>	
	Hispanic or Latino	
	Not Hispanic or Latino	
	Unknown	
10.	Race	
•	American Indian or Alaska Native	
	Asian (Specify:	)
	Black or African American	
	Native Hawaiian or Other Pacific Islander (Specify:	)
	White	
	Other Race (Specify:	)
	Unknown	

### Q9 and Q10 Ethnicity and Race: Susy

9.	Ethnicity
	X Hispanic or Latino
	Not Hispanic or Latino
	Unknown

10.	Race
	X American Indian or Alaska Native
	Asian (Specify:)
	Black or African American
	Native Hawaiian or Other Pacific Islander (Specify:)
	X_White
	Other Race (Specify:)
	Unknown

#### **Specifying Asian Race**

 Persons with origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent



– Filipino

Laotian

Singaporean

Bangladeshi

Hmong

Malaysian

Sri Lankan

Bhutanese

Indonesian

Maldivian

Taiwanese

Burmese

Iwo Jiman

Nepalese

Thai

Cambodian

Japanese

Okinawan

Vietnamese

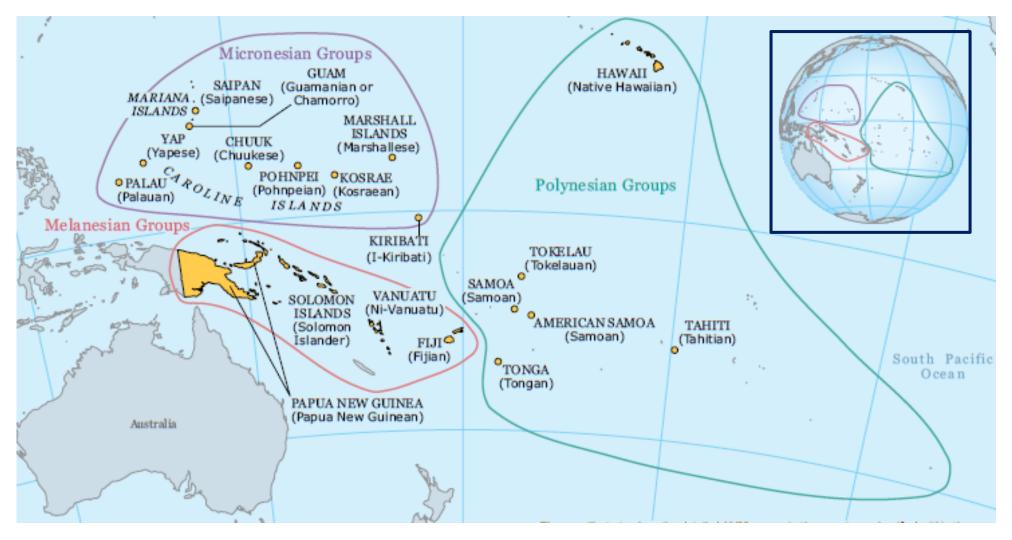
Chinese

Korean

Pakistani

Other Asian

#### **Specifying Native Hawaiian or Other Pacific Islander Race**



## **Common Misconceptions Reporting Race and Nationality**

- Ensure cases who are born in India are classified correctly
  - Do not classify persons born in India as "American Indian"
  - Persons born in India should be classified as Asian Indian



India

 Be aware that <u>Republic of the Congo</u> is not the same as <u>Democratic Republic of the Congo</u> (DRC, formerly Zaire)





# Q12 Country of Usual Residence Case Study: Glenda

- Born and grew up in Jamaica
- Glenda is in her 4<sup>th</sup> year at the University of Georgia
- She was diagnosed with TB and is currently on treatment in Athens,
   Georgia
- She travels home to visit her parents in Jamaica

### Q12 Case Study: Glenda, continued

How should you complete item 12 on the RVCT for Glenda?

12.	Country of Usual Residence		
	a.	Country of Usual Residence:	
	b.	If <b>NOT</b> U.S. Reporting Area, Has Been in United States for ≥90 days (inclusive of Report Date)? Yes No	
		Unknown	

#### Q12 Case Study: Glenda, correct answer

12.	2. <u>Country of Usual Residence</u>	
	a.	Country of Usual Residence: United States
	b.	If NOT U.S. Reporting Area, Has Been in United States for ≥90 days (inclusive of Report Date)?

And the Georgia TB program would also count this case (items Q2 and Q5),
 because she had already been in USA ≥90 days when her TB evaluation began

#### Q14 Initial Reason Evaluated for TB

**Initial Reason Evaluated for TB Contact Investigation Contact Investigation option Any TB-specific screening** Screening ← includes cases found via TB Symptoms Patient first came to source case investigations Completely medical attention Other < incidental because of TB symptoms Unknown finding

- To examine trends in how TB cases come to the attention of the public health or medical establishment
  - Response options presented as hierarchy; select 1<sup>st</sup> option that applies

#### Q14 Case Study: Casey

- Casey is a nursing student at the local university
- She is beginning her clinical rotations, so she receives a tuberculin skin test (TST) at the student health clinic
- Her TST is positive at 17 mm
  - After further evaluation,
     she is diagnosed with TB disease



#### Q14 Casey, continued

How should you complete item 14 on the RVCT for Casey?

<b>Initial Reason Evaluated for TB</b>		
Contact Investigation		
Screening		
TB Symptoms		
Other		
Unknown		

#### Q14 Casey, correct answer

#### **Initial Reason Evaluated for TB**

Contact Investigation

X Screening

\_\_\_TB Symptoms

Other

Unknown

# Q15 Occupation and Industry Case Study: Asa

- Asa drove himself to the local hospital reporting cough, fever, chills, and shortness of breath; thought he had COVID-19
  - TB disease was diagnosed
- He was never a health care, correctional, or migrant/seasonal worker
- He runs a coffee shop called Asa's Place in Edge Hill, Georgia

#### Q15 Case Study: Asa, continued

How should you complete item 15 on the RVCT for James?

15.	Occu	pation and Industry		
	a.	Has the patient <i>ever</i> worked as one of the following? (select all that apply)		
		Healthcare Worker		
		Correctional Facility Employee		
		Migrant/Seasonal Worker		
		None of the above		
		Unknown		
	b.	Patient's Current Occupation(s) and Industry(ies)		
		Occupation Industry		

### Q15 Case Study: Asa, correct answer

15.	Occu	Occupation and Industry		
	a.	<ul> <li>Has the patient ever worked as one of the following? (select all that apply)</li> </ul>		
		Healthcare Worker		
		Correctional Facility Employee		
		Migrant/Seasonal Worker		
		X None of the above		
		Unknown		
	b.	Patient's Current Occupation(s) and Industry(ies)		
	٠.	ratione o carrone o coapation(o) and made (100)		
		Occupation Industry		

### Q15 Case Study: Asa, correct answer

b. Patient's Current Occupation(s) and Industry(ies)

Occupation	Industry
Shop owner	Coffee shop

#### Q19 Case Study: Ferris

 On his days off, Ferris regularly uses marijuana

 He also occasionally gets together with friends at hookah lounges, where they like to sample different flavored tobacco products



#### Q19: Current Smoking Status at Diagnostic Evaluation

Current everyday smoker: Patient currently inhales nicotine every day

Current someday smoker: Patient currently inhales nicotine some days,
 but not every day

Former smoker: Patient smoked ≥100 cigarettes/cigars during lifetime, then quit

Never smoker: Patient smoked 0–99 cigarettes/cigars

during lifetime



#### Q19 Case Study: Ferris, continued

How should you complete item 19 on the RVCT for Ferris?

19.	<b>Current Smoking Status at Diagnostic Evaluation</b>			
	Current everyday smoker			
	Current someday smoker			
	Former smoker			
	Never smoker			
	Smoker, current status unknown			
	Unknown if ever smoked			

#### Q19 Case Study: Ferris, correct answer

19.	. Current Smoking Status at Diagnostic Evaluation			
	Current everyday smoker			
X Current someday smoker				
	Former smoker			
	Never smoker			
	Smoker, current status unknown			
	Unknown if ever smoked			

AND report his marijuana use in Q16 Noninjection drug use



# Q20 Lived Outside the United States for >2 Months (Uninterrupted) Case Study 1 of 2: Matthew

- Matthew is an adolescent who received a diagnosis of TB in your jurisdiction
- Matthew was born in Ramstein, Germany, where his parents were both active duty with the U.S. Air Force
- Three months after he was born, they changed duty stations and moved to Virginia

#### Q20 Case Study 1 of 2: Matthew, continued

How should you complete item 20 on the RVCT for Matthew?

20. Lived outside of the United States for >2 months (uninterru				
	Yes			
	No			
	Unknown			

### Q20 Case Study 1 of 2: Matthew, correct answer

20.	<u>Lived outside of the United States for &gt;2 months (uninterrupted)?</u>			
	X Yes			
	No			
	Unknown			

#### Q20 Case Study 2 of 2: Derrick

- Derrick is the CDC Public Health Advisor assigned to the Hawaii TB program
- Lately, he has had a lot of consecutive work trips
  - CNMI for 3 weeks, then
  - Guam for 4 weeks, and then
  - American Samoa for 3 weeks

#### Q20 Case Study 2 of 2: Derrick, continued

How should you complete item 20 on the RVCT for Derrick?

20.	<ol><li>Lived outside of the United States for &gt;2 mor</li></ol>	nths (uninterrupted)?
	Yes	
	No	
	Unknown	

#### **Q20 Case Study: Derrick, correct answer**

20.	<u>Lived outside of the United States for &gt;2 months (uninterrupted)?</u>
	Yes
	No
	Unknown

For Q20, anywhere outside the 50 U.S. states, District of Columbia,
 Puerto Rico, or the U.S. Virgin Islands

## Q23 Has the Patient Been Previously Diagnosed with TB Disease or LTBI? Case Study: David

- David has never been diagnosed with TB disease or latent TB infection (LTBI) before
- On January 23, 2019, following a positive TST and normal chest x-ray, David begins LTBI treatment

- He completes LTBI treatment6 months later
- He spends the 2019–2020 school year in South Africa
- In the fall of 2020, David seeks care several times for a persistent cough
- Eventually, he is diagnosed with pulmonary TB disease

#### Q23 Case Study: David, correct answers

How should you answer item 23 on the RVCT for David?

Has the Patient been	Previously Diagnosed v	WILLI ID DISEASE OF LIDE:	
Yes			
No			
 Unknown			
<del></del>			
If YES, Complete Tab	le Below (unlimited nur	mber of rows may be entered):	
•	le Below (unlimited nui	mber of rows may be entered):	Completed Treatment?
If YES, Complete Tab Diagnosis Type (TB Disease/LTBI)	le Below (unlimited nur Date of Diagnosis	mber of rows may be entered):  Previous State Case No.	Completed Treatment? (Yes/No/Unknown)
Diagnosis Type			
Diagnosis Type	Date of Diagnosis	Previous State Case No.	

#### Q23 Case Study: David, correct answers

23 Has the Patient been Previously Diagnosed with TR Disease or LTRI?

		With 1D Discuse of Elbi.	
<b>X</b> Yes			
No			
Unknown			
If YES, Complete Tab	le Below (unlimited nur	mber of rows may be entered):	
Lo, complete las	ne below (allillillicea ilai	liber of rows may be enteredj.	
Diagnosis Type	ne below (dillillilliced flui	ilber of fows may be entered).	Completed Treatment?
	Date of Diagnosis	Previous State Case No.	Completed Treatment? (Yes/No/Unknown)
Diagnosis Type			
Diagnosis Type (TB Disease/LTBI)	Date of Diagnosis	Previous State Case No.	(Yes/No/Unknown)

Since no state case # assigned to LTBI cases, leave that part blank

## Q24 Date of Illness Onset/Symptom Start Date Case Study: Emma

- Emma is scheduled for surgery to implant a pacemaker on February 14, 2020
- Despite her irregular heart rate,
   Emma says she feels fine

- A chest x-ray is part of her routine pre-op appointment February 11
  - An abnormality in the lungs is flagged
  - Her cardiologist orders a
     pulmonology consultation,
     and Emma is subsequently
     diagnosed with smear-neg TB
- Emma continues to insist she feels fine

#### Q24 Case Study: Emma, continued

How should you complete item 24 on the RVCT for Emma?

24. Date of Illness Onset/Symptom Start Date:

#### Q24 Case Study: Emma, correct answer

24. Date of Illness Onset/Symptom Start Date: 0 2/1 1/2 0 2 0

## **Q26 Case Meets Binational Reporting Criteria? Case Study: Pedro**

- Pedro lives and works in El Paso, where he receives his TB treatment
- He regularly crosses the border to visit family in Mexico
  - He frequently brings his grandmother's homemade queso fresco back with him

After genotyping of Pedro's TB isolate, M. bovis is identified

#### **Q26 Case Study: Pedro**

How should you complete item 26 on the RVCT for Pedro?

26.	Case Meets Binational Reporting Criteria?
	Yes
	If Yes, Which Criteria were Met? (Select All That Apply)
	Exposure to Suspected Product from Canada or Mexico (e.g., dairy product for M. bovis case)
	Has Case Contacts In or From Mexico or Canada
	Potentially Exposed by a Resident of Mexico or Canada
	Potentially Exposed while in Mexico or Canada
	Resident of Canada or Mexico
	Other Situations that May Require Binational Notification or Coordination of Response
	No
	Unknown

#### Q26 Case Study: Pedro, correct answer

How should you complete item 26 on the RVCT?

26.	Case Meets Binational Reporting Criteria?
	X Yes
	If Yes, Which Criteria were Met? (Select All That Apply)
	X Exposure to Suspected Product from Canada or Mexico (e.g., dairy product for <i>M. bovis</i> case)
	X Has Case Contacts In or From Mexico or Canada
	X Potentially Exposed by a Resident of Mexico or Canada
	X Potentially Exposed while in Mexico or Canada
	Resident of Canada or Mexico
	Other Situations that May Require Binational Notification or Coordination of Response
	No
	Unknown

## Q28 Contact Investigation Conducted for this Case? Q29 All Known Epi-Linked TB and LTBI Cases Case Study: John

- John was just diagnosed with smear-positive and cavitary pulmonary TB,
   so he is a high priority for contact investigation
- During John's contact investigation, you identify 1 new case of TB disease and 2 LTBI cases among John's contacts — their state case numbers:
  - 2019-ST-876543210
  - 2019-ST-LTBI00234
  - 2019-ST-LTBI00235

- 2019-ST-876543210
- 2019-ST-LTBI00234

#### Q28 & Q29 Case Study: John, continued

- 2019-ST-LTBI00235
- How should you complete items 28 and 29 on the RVCT for John?

28.	Contact Investigation Conducted for Thi	s Case?
	Yes	
	No	
	Unknown	
29.	Complete Table Below for All Known TB	and LTBI Cases Epidemiologically Linked to this Case
29.	Complete Table Below for All Known TB (an unlimited number of rows may be ex	
29.		
29.	(an unlimited number of rows may be e	
29.	(an unlimited number of rows may be en State Case Number	

#### Q28 & Q29 Case Study: John, correct answers

28. Contact Investigation Conducted for This Case?

X Yes

No

Unknown

29. Complete Table Below for All Known TB and LTBI Cases Epidemiologically Linked to this Case (an unlimited number of rows may be entered):

State Case Number
2019 – ST – 876543210
2019 – ST – LTBI00234
2019 – ST – LTBI00235

And on 2019-ST-87654210's RVCT, be sure Q27 = Yes and Q29 lists John

#### Q31 Case Study: Kristin

 Kristin is taking isoniazid, rifabutin, pyrazinamide, and ethambutol in the initial treatment phase for her TB disease

#### Q31 Kristin, continued

How would you complete item 31 on the RVCT for Kristin?

Note new drugs in list

## Q31 Kristin, correct answers

Drug Name	Used?
Isoniazid	Yes
Rifampin	No
Pyrazinamide	Yes
Ethambutol	Yes
Streptomycin	No
Rifabutin	Yes
Rifapentine	No
Ethionamide	No
Amikacin	No
Kanamycin	No
Capreomycin	No
Ciprofloxacin	No
Levofloxacin	No
Ofloxacin	No
Moxifloxacin	No
Cycloserine	No
Para-Amino Salicylic Acid	No
Linezolid	No
Bedaquiline	No
Delamanid	No
Clofazimine	No
Pretomanid	No
Other:	No

## Q32 If Initial Regimen NOT RIPE/HRZE, Why Not? Case Study: Basab and Ben

Pyrosequencing techniques

 at the state public health lab
 identified rifampin resistance
 soon after Basab's TB diagnosis

 Gene Xpert MTB/RIF results suggested rifampin resistance at the time of Ben's TB diagnosis

#### Q32 Case Study: Basab and Ben

- Pyrosequencing techniques at the state public health lab identified rifampin resistance soon after Basab's TB diagnosis
  - Sequencing data identifies
     specific DNA mutation in rpoB gene
     and corresponding amino acid
     change that confers RIF resistance
- Gene Xpert MTB/RIF\* results suggested rifampin resistance at the time of Ben's TB diagnosis
  - Detects rpoB gene mutation that is possibly associated with RIF resistance
  - Does not provide information on the specific mutation
- Both had initial treatment regimens for multidrug-resistant (MDR) TB

#### Q32 Case Study: Basab and Ben, continued

- How should you complete item 32 for Basab (where med decision was based on sequencing methods)?
- How should you complete item 32 for Ben (where med decision was based on a nonsequencing method)?

32.	If Initial Drug Regimen NOT RIPE/HRZE, Why Not?
	Drug contraindication/interaction
	Drug susceptibility testing results already known
	Suspected drug resistance
	Drug shortage
	Other (Specify:) Unknown

32.	If Initial Drug Regimen NOT RIPE/HRZE, Why Not?
	Drug contraindication/interaction
	Drug susceptibility testing results already known
	Suspected drug resistance
	Drug shortage
	Other (Specify:)
	Unknown

#### Q32 Case Study: Basab and Ben, correct answers

- Sequencing methods for this mutation considered confirmatory
- Nonsequencing methods identify gene mutations associated with resistance, but are not confirmatory

32.	If Initial Drug Regimen NOT RIPE/HRZE, Why Not?
	Drug contraindication/interaction
	X Drug susceptibility testing results already known
	Suspected drug resistance
	Drug shortage
	Other (Specify:) Unknown

If Initial Drug Regimen NOT RIPE/HRZE, Why Not?
Drug contraindication/interaction
Drug susceptibility testing results already known
X Suspected drug resistance
Drug shortage
Other (Specify:)
Unknown

#### Q34 Phenotypic/Growth-Based DST Results

Drug Name	Date Collected	Date Reported	Specimen Source	Result (Susceptible, Resistant, Unknown, Not Done)
Isoniazid	07/01/2020	09/02/2020	Sputum	Susceptible
Rifampin	07/01/2020	09/02/2020	Sputum	Susceptible
Pyrazinamide	07/01/2020	09/02/2020	Sputum	Susceptible
Ethambutol	07/01/2020	09/02/2020	Sputum	Susceptible
Streptomycin				Not Done
Rifabutin	00/00/0000	00/00/0000		Not Done
Rifapentine	00/00/0000	00/00/0000		Not Done
Ethionamide	00/00/0000	00/00/0000		Not Done
Amikacin	00/00/0000	00/00/0000		Not Done
Kanamycin	00/00/0000	00/00/0000		Not Done
Capreomycin	00/00/0000	00/00/0000		Not Done
Ciprofloxacin	00/00/0000	00/00/0000		Not Done
Levofloxacin	00/00/0000	00/00/0000		Not Done
Ofloxacin	00/00/0000	00/00/0000		Not Done
Moxifloxacin	00/00/0000	00/00/0000		Not Done
Other Quinolones	00/00/0000	00/00/0000		Not Done
Cycloserine	00/00/0000	00/00/0000		Not Done
Para-Amino Salicylic Acid	00/00/0000	00/00/0000		Not Done
Bedaquiline	00/00/0000	00/00/0000		Not Done
Clofazimine	00/00/0000	00/00/0000		Not Done
Delamanid	00/00/0000	00/00/0000		Not Done
Linezolid	00/00/0000	00/00/0000		Not Done
Pretomanid	00/00/0000	00/00/0000		Not Done
	00/00/0000	00/00/0000		

### Q36 Was the Patient Treated as an MDR TB Case? Case Study 1 of 2: Wyatt

- Wyatt is 4 years old; his mom is being treated for culture-confirmed MDR TB
- Wyatt's chest radiograph showed primary
   TB disease
- Wyatt's gastric aspirates are unsuccessful in retrieving M. tuberculosis
- Nevertheless, Wyatt's physician decides to prescribe an MDR TB treatment regimen based on the drug-resistance pattern of his mother's MDR TB disease

#### Q36 Case Study 1 of 2: Wyatt, continued

How should you complete item 36 on the RVCT for Wyatt?

36.	<b>Was the Patient</b>	Treated as	an MDR	TB Case	(Regardless	of DST	Results)?
	Yes						

\_\_\_No

Unknown

If YES, complete MDR TB Supplemental Data Form



#### Q36 Case Study 1 of 2: Wyatt, correct answer

36.	Was the Patient Treated as an MDR TB Case (Regardless of DST Results)?
	X Yes
	No
	Unknown
	If YES, complete MDR TB Supplemental Data Form

#### Q36 Case Study 2 of 2: Ms. Funk

- Ms. Funk has isoniazid-resistant TB
  - Not MDR TB because it is still susceptible to rifampin
- Her physician prescribes a regimen of rifampin, pyrazinamide, ethambutol, and levofloxacin



- But she hates rifampin's side effects and refuses to continue taking rifampin
- Her physician switches her to an MDR TB treatment regimen even though she does not have MDR TB

#### Q36 Case Study 2 of 2: Ms. Funk, continued

How should you complete item 36 on the RVCT for Ms. Funk?

36.	Was the Patient Treated as an MDR TB Case (Regardless of DST Results)?
	Yes
	No
	Unknown
	If YES, complete MDR TB Supplemental Data Form

#### Q36 Case Study 2 of 2: Ms. Funk, correct answer

36. Was the Patient Treated as an MDR TB Case (Regardless of DST Results)?

Yes

No

Unknown

If YES, complete MDR TB Supplemental Data Form

# Thank You Questions?

