



# Mayo Clinic Center for Tuberculosis

## TB Class Arrivals as Public Health Approach



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Medical Director, Public Health-Dayton & Montgomery Co

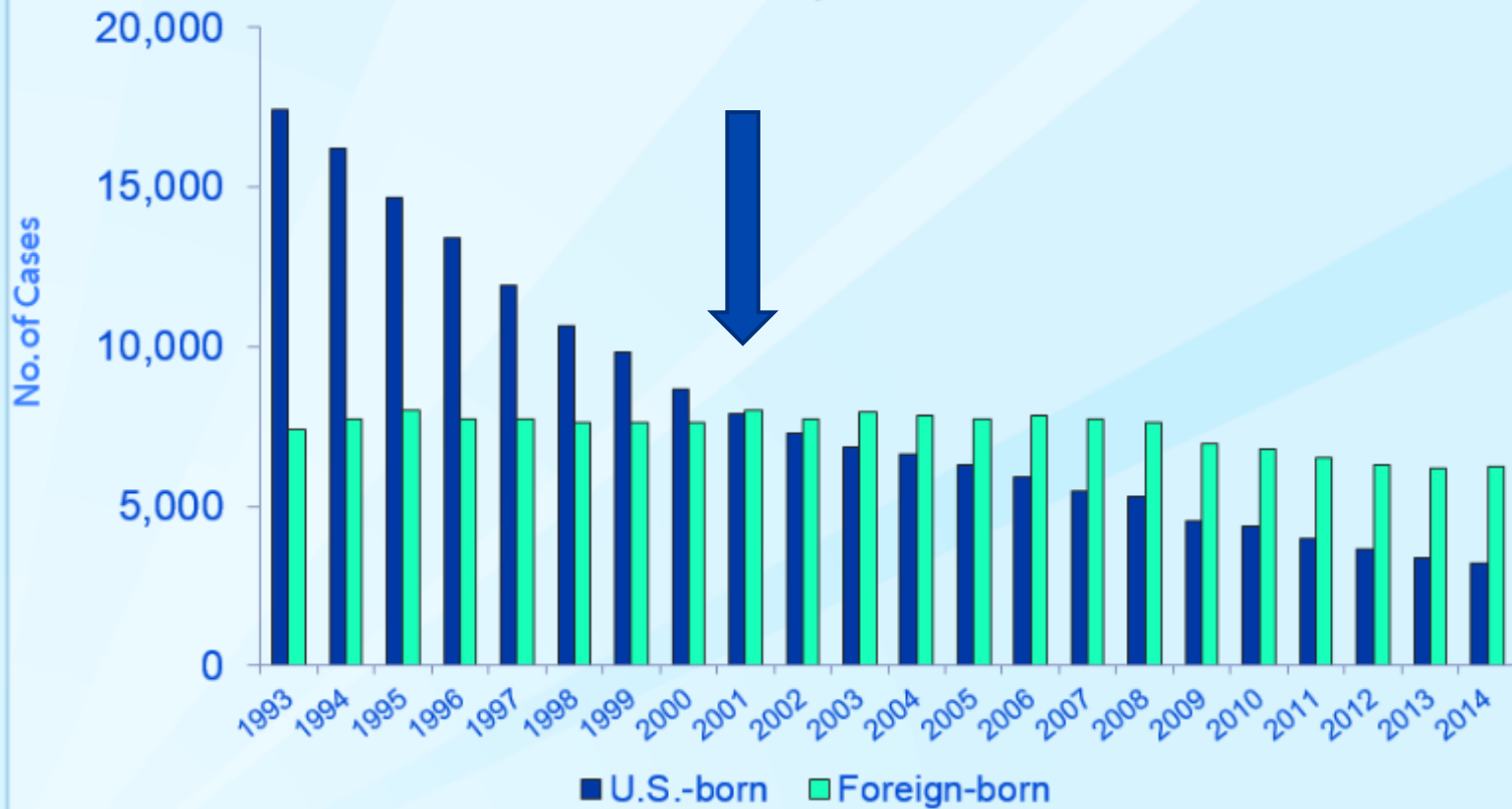
# Disclosures

- None

# Objectives

- Identify two types of US visas that do not require a person to undergo TB testing prior to arrival in the US
- Describe the differences in TB Class designations by overseas screening results
- Describe the different roles of state TB control, local public health agencies, private providers, community clinics, and refugee resettlement agencies in ensuring that immigrants and refugees with TB Class conditions are evaluated after arriving in the US
- Describe the purpose of the domestic TB medical evaluation recommended after an individual with TB Class Condition identified overseas arrives in the US
- Name two barriers to successful TB follow-up evaluation and describe how they may be overcome

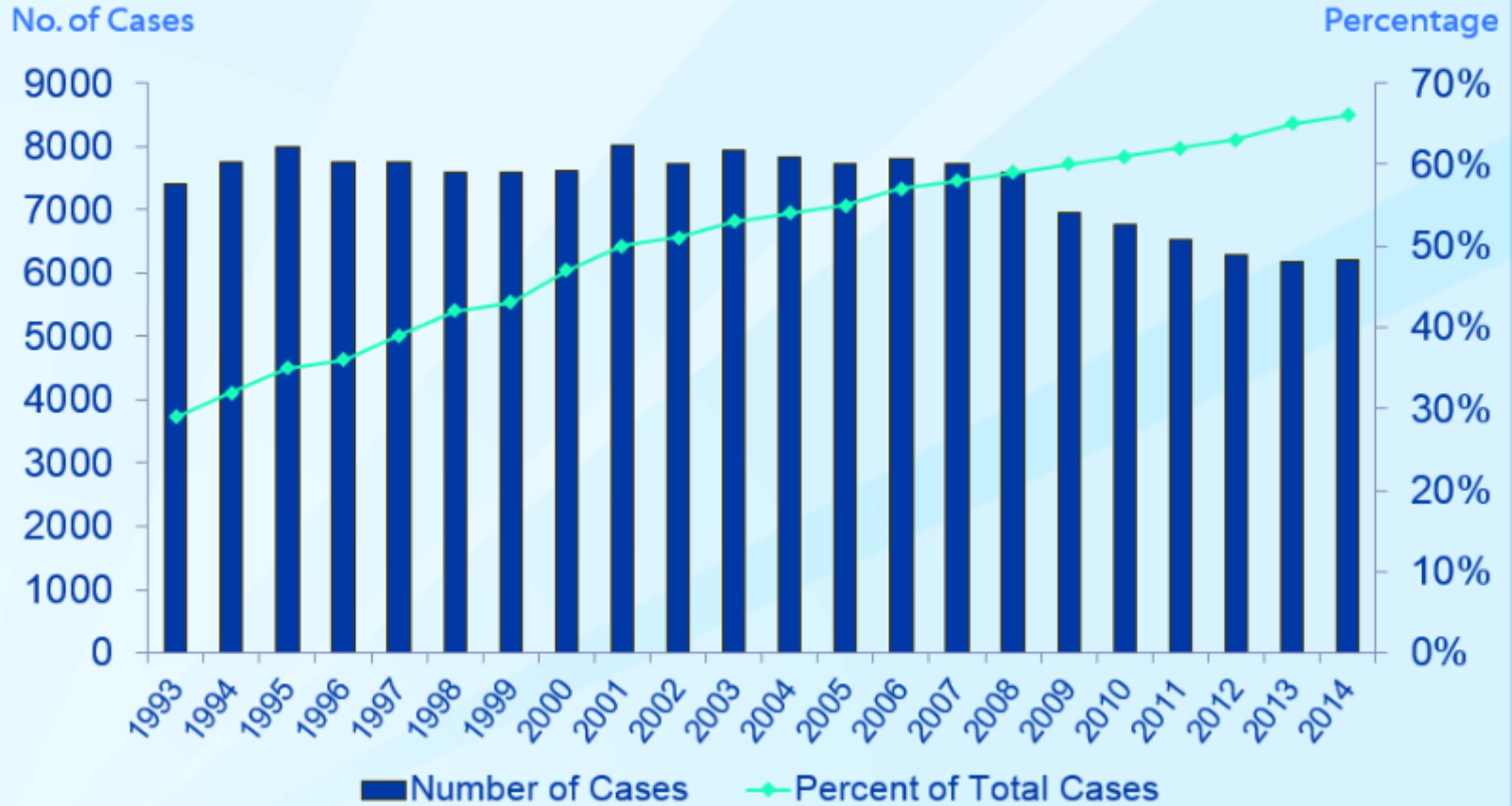
# Number of TB Cases in U.S.-born vs. Foreign-born Persons, United States, 1993–2014\*



\*Updated as of June 5, 2015.



# Trends in TB Cases in Foreign-born Persons, United States, 1993 – 2014\*

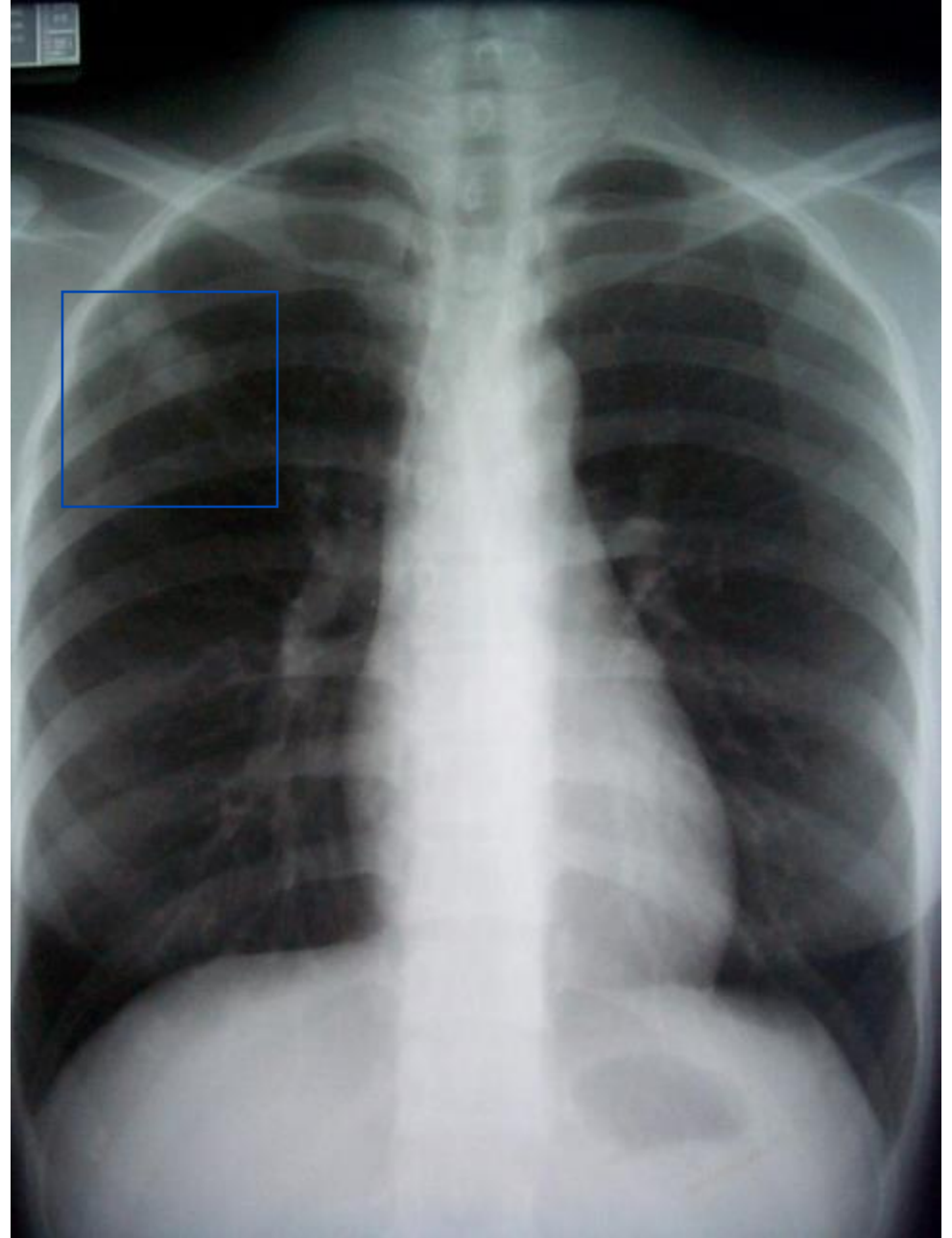


\*Updated as of June 5, 2015.



# Case 1

- 30 yo woman from SE Asia
- In US on Immigrant visa
- Reported no symptoms
- PPD 15 mm



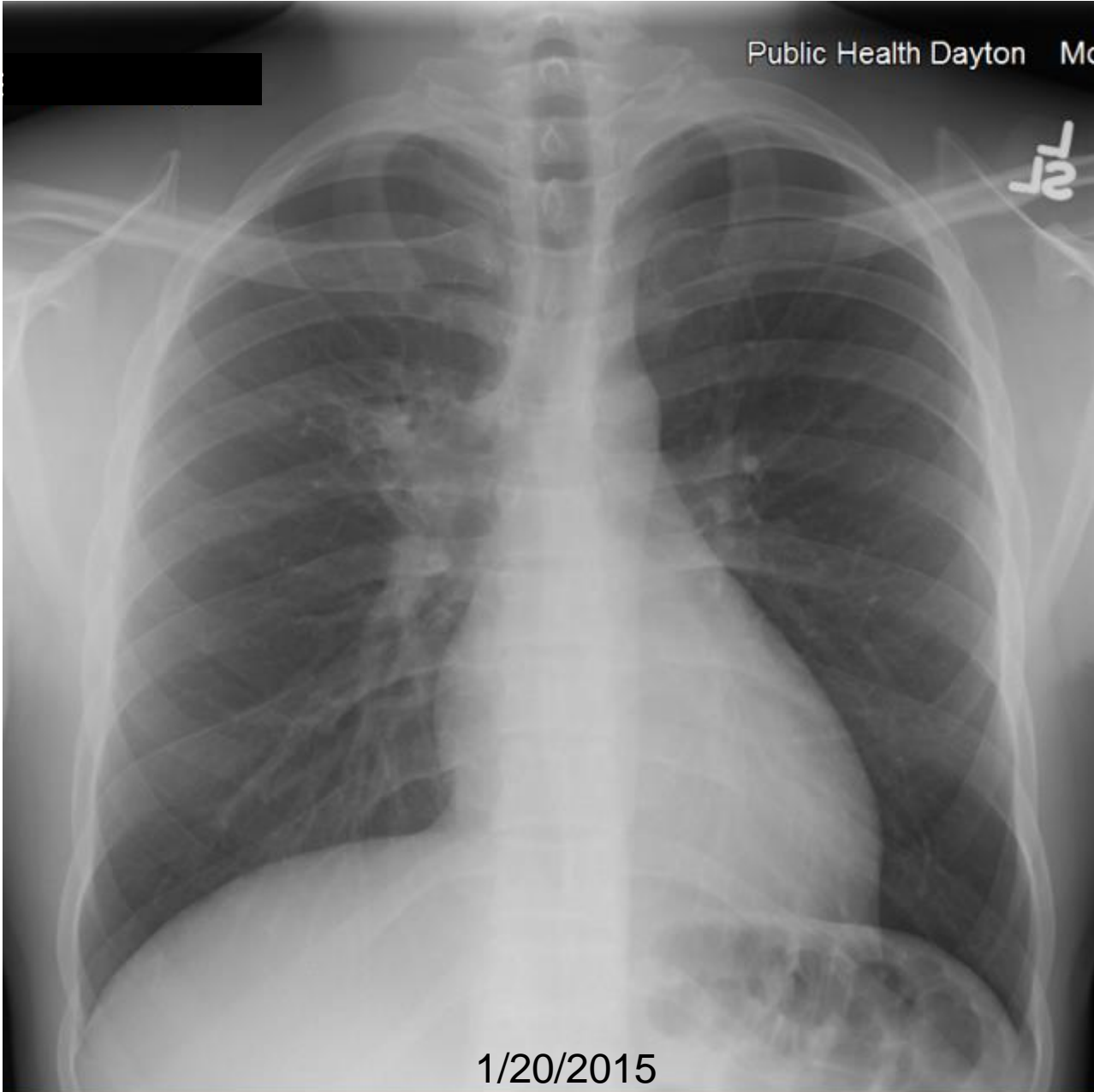
# Case 1

- AFB sputum culture grew *M. tuberculosis*
- Isolate INH-resistant
- Completed 6 month course of treatment
- No documented secondary cases



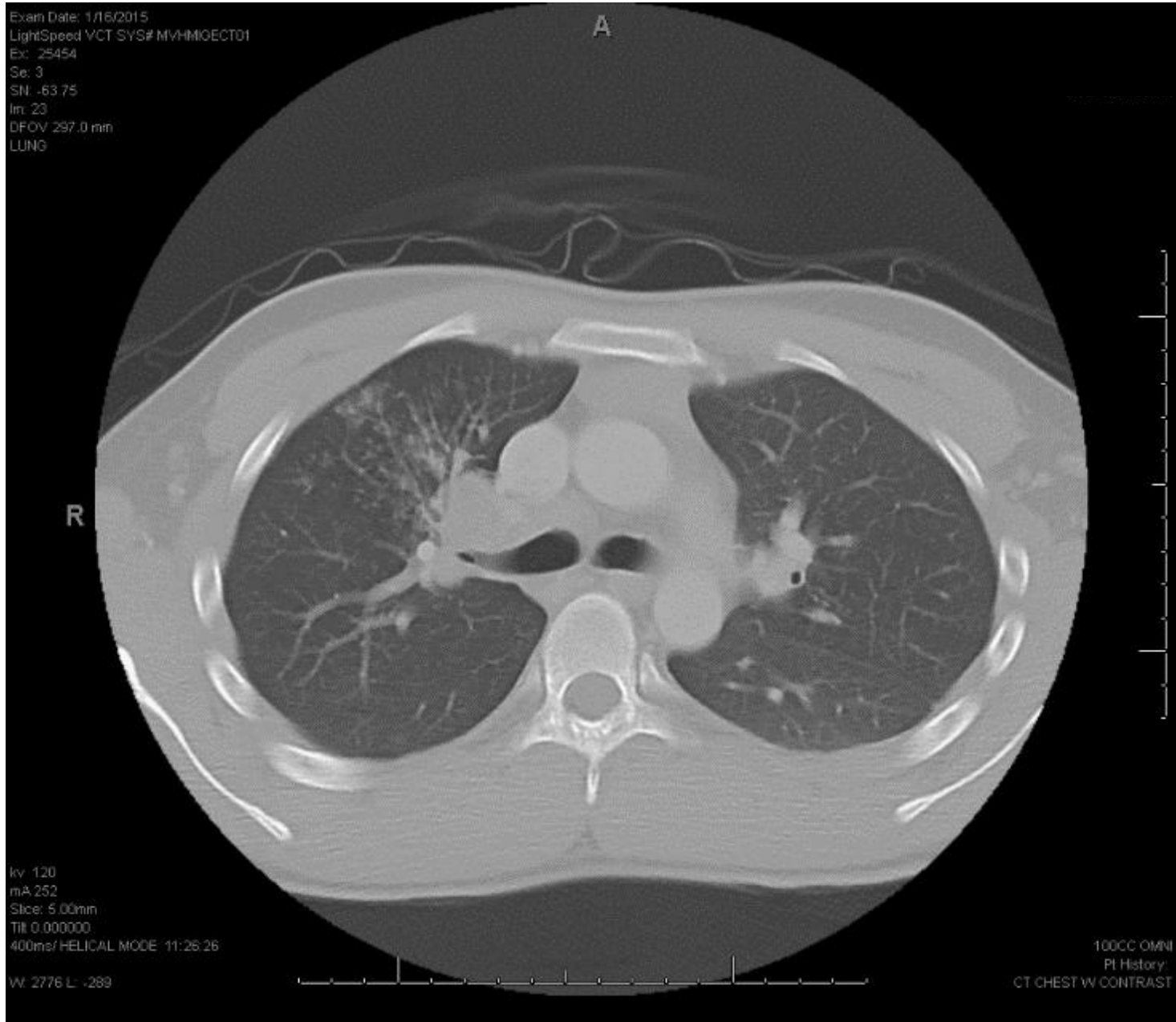
## Case 2

- 20 yo man
- Refugee, born in Dem Rep Congo
- Overseas exam in Kenya in July
  - CXR normal
  - No further TB evaluation
- Arrived in Dayton in October
- Decreased appetite without weight loss
- TST in December 29 mm, T Spot positive



1/20/2015

Exam Date: 1/16/2015  
LightSpeed VCT SYS# MVHMI0ECT01  
Ex: 25454  
Se: 3  
SN: -63.75  
In: 23  
DFOV: 297.0 mm  
LUNG

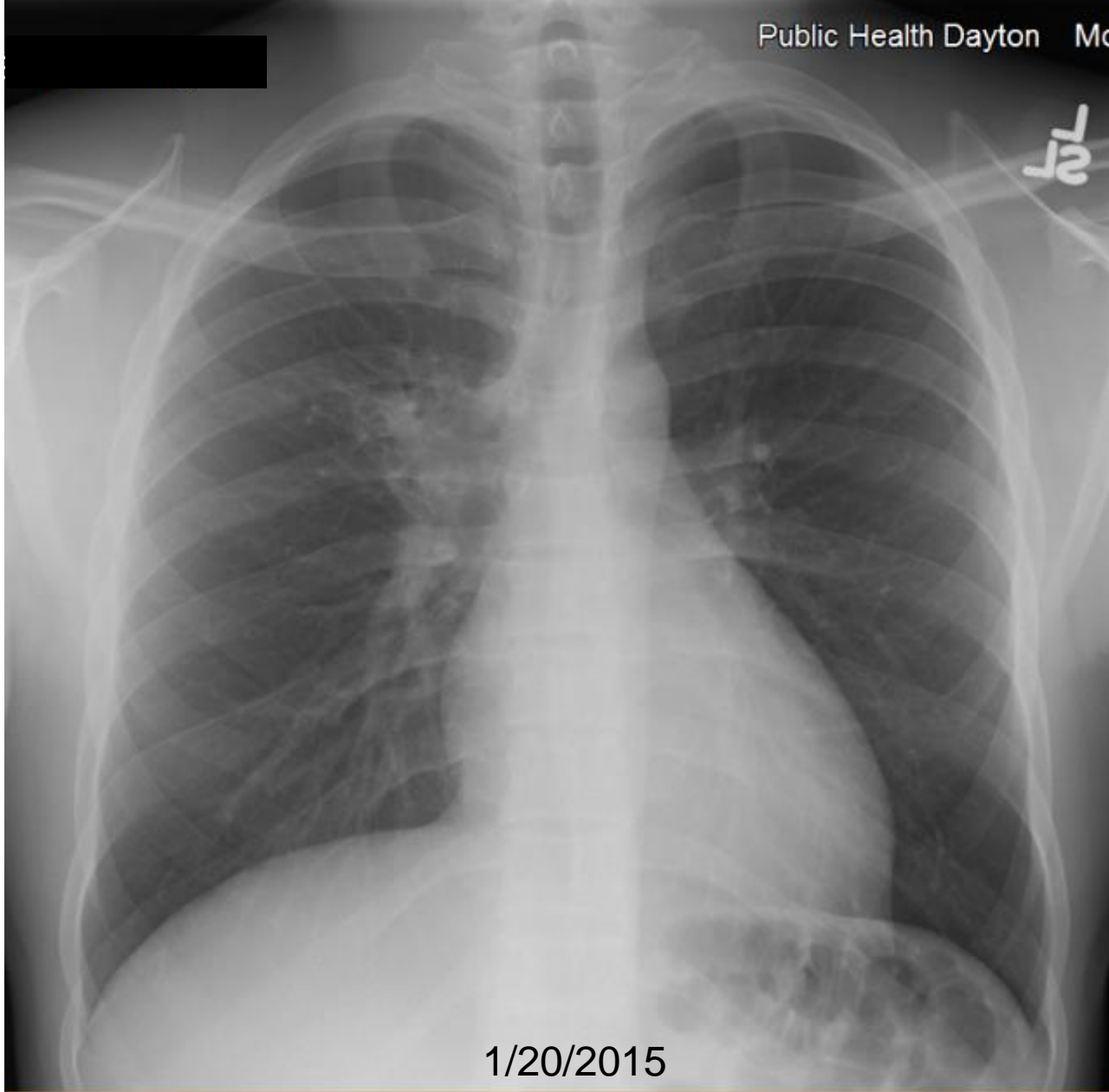


kv 120  
mA 252  
Slice: 5.00mm  
Tilt: 0.000000  
400ms/ HELICAL MODE: 11:26:26  
W: 2776 L: -289

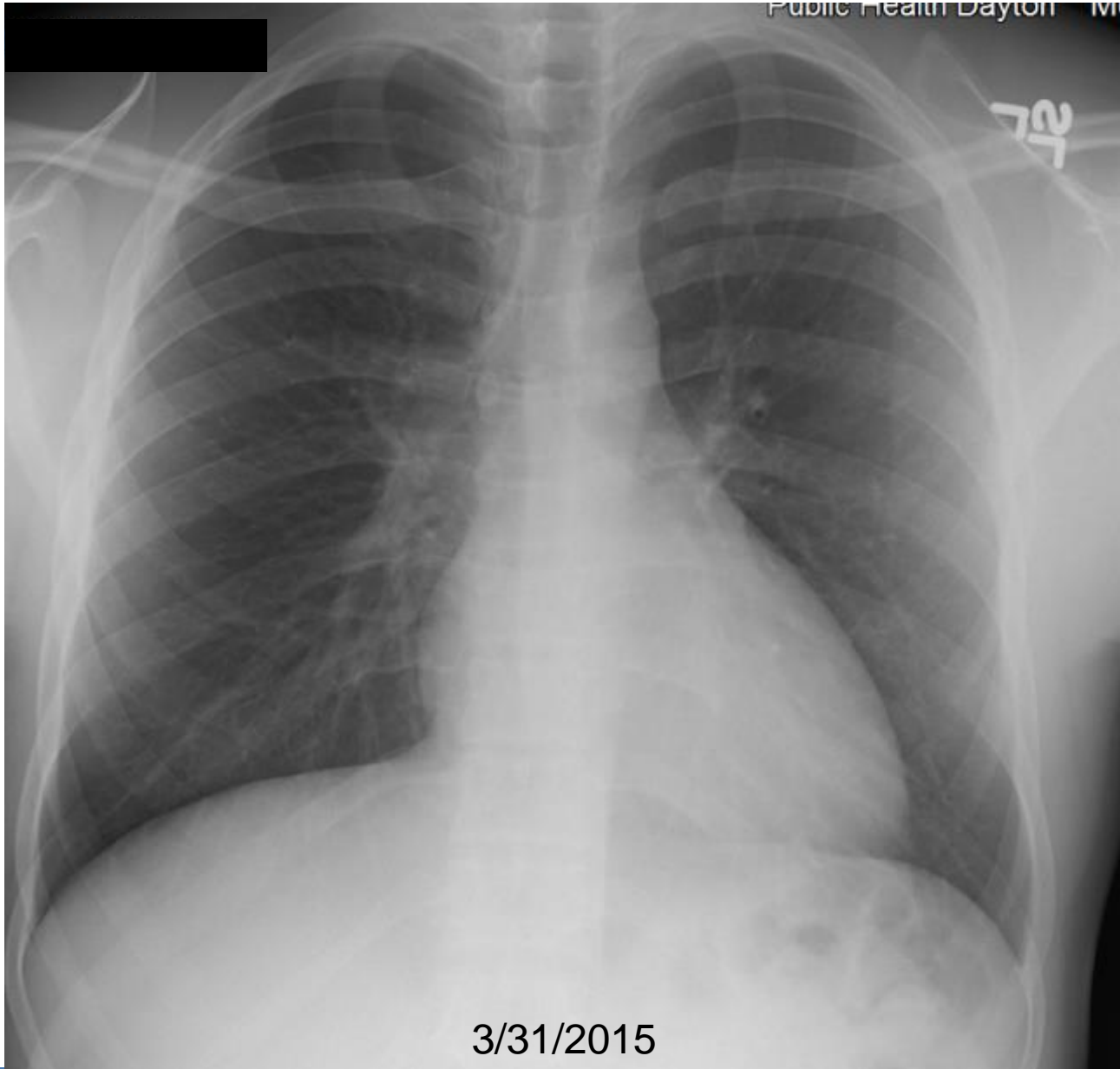
100CC OMNI  
PI History:  
CT CHEST W CONTRAST

## Case 2

- Unable to produce sputum (no cough)
- Pulmonary consultation requested (deferred)
- Started on RIPE



1/20/2015



3/31/2015

# Who is an Immigrant?

- An alien who has been granted the right by the USCIS to reside permanently in the United States and to work without restrictions in the United States
- Includes voluntary migration for economic, political, religious and/or social reasons
- Overseas screening required for Immigrant Visa

# Refugee

- Suffered past persecution, or reasonable fear of future persecution
- Pass medical and security criteria
- Sponsor assurance
- After 1 yr, may apply for permanent resident status
- After 5 yrs, may apply for citizenship



# Admissions to U.S., 2013 (Total ~ 174 million)



<http://www.dhs.gov/yearbook-immigration-statistics>

# Entities Involved in Refugee Resettlement

- United Nations High Commission for Refugees
- Department of Homeland Security
- United States Citizenship & Immigration Services
- Department of State
- Department of Health and Human Services
- Ohio Dept of Job & Family Services
- Montgomery Co Dept of Job & Family Services
- Private Organizations (Sponsor Agencies)
- Volunteers from the local community



# Mayo Clinic Center for Tuberculosis

## Screening for Tuberculosis



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**CDC IMMIGRATION REQUIREMENTS:  
TECHNICAL INSTRUCTIONS FOR TUBERCULOSIS  
SCREENING AND TREATMENT  
USING CULTURES AND DIRECTLY  
OBSERVED THERAPY**

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**U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention  
National Center for Emerging and Zoonotic Infectious Diseases**

**Division of Global Migration and Quarantine**

**Issued October 1, 2009**

# Overseas Screening for TB

## Technical Instructions for Panel Physicians

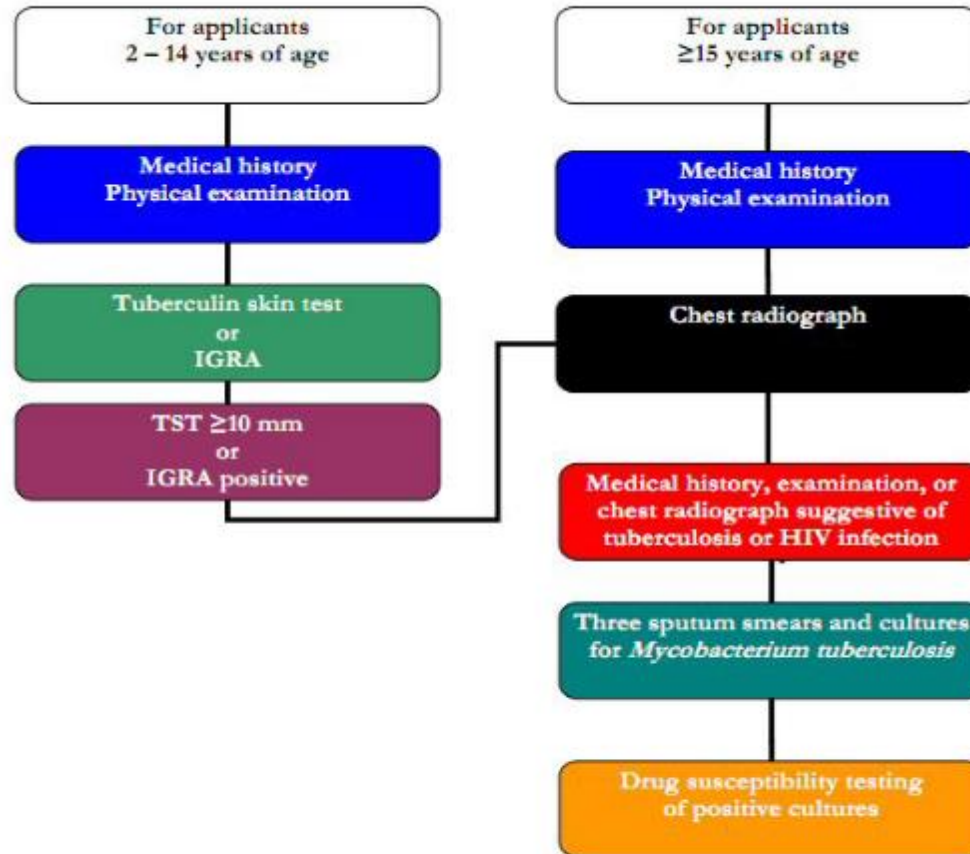


Figure 2: Tuberculosis screening medical examination for applicants  $\geq 2$  years of age in countries with a WHO-estimated tuberculosis incidence rate  $\geq 20$  cases per 100,000 population.

# TB Classification

<u>Class</u>	<u>1991</u>	<u>2007</u>
A	Abnl CXR, +smear	Active TB
B1-Pulm	Active TB, not infectious	Abnl CXR, neg culture
B1-EP	N/A	Extra-pulm TB
B2	TB, not clinically active	Latent TBI
B3	CXR c/w “old TB”	TB Contact

# TB Screening

<u>Category</u>	<u>1991</u>	<u>2007</u>
Valid (nI/B2)	12 months	6 months
Valid (A/B1)	6 months	3 months
TST	Not used	Ages 2-14*
Sputums	Smears (B1)	Sm/Cx/DST
Monitoring†	None	Monthly Cx
Contacts	None	TST (B3)

\* In countries with incidence > 20/100,000

† During treatment for active tuberculosis

# Tuberculosis Worksheet

U.S. Department of State  
**TUBERCULOSIS WORKSHEET**  
For Use with DS-2054

OMB No. 1420-0113  
EXPIRATION DATE: 06/30/2017  
ESTIMATED BURDEN: 20 MINUTES  
(See Page 2 - Back of Form)

Photo: \_\_\_\_\_ Name (Last, First, MI) \_\_\_\_\_ Age \_\_\_\_\_  
 Birth Date (mm-dd-yyyy) \_\_\_\_\_ Passport Number \_\_\_\_\_ Alien (Case) Number \_\_\_\_\_

**1. Test for Cell-Mediated Immunity to Tuberculosis**  
 Required for applicants 2 through 14 years of age where WHO-estimated TB rate  $\geq 20$  per 100,000 and contacts; perform one type only.

TST Date applied (mm-dd-yyyy) \_\_\_\_\_ Results (mm) \_\_\_\_\_  
 QFT Nil Value: IU \_\_\_\_\_ TB Response: TB minus nil (U/ml) \_\_\_\_\_

IGRA Date drawn (mm-dd-yyyy) \_\_\_\_\_  
 Positive  
 Negative  
 Indeterminate, Borderline, or Equivocal  
 T-Spot Nil Value: Number of cells \_\_\_\_\_ TB Response: Higher of Panel A or Panel B minus nil value \_\_\_\_\_

**2. Chest X-Ray Indication (Mark all that apply)**

Chest X-Ray not indicated  Known HIV infection  
 Age  $\geq 15$  years  TST  $\geq 10$  mm or IGRA positive  
 Signs or symptoms of tuberculosis  Contact: TST  $> 5$  mm or IGRA positive  
 Date Chest X-Ray Taken (mm-dd-yyyy) \_\_\_\_\_

**3. Chest X-Ray Findings**

Normal Findings  Abnormal Findings (Indicate category and finding; checking all that apply in the tables below)

Can Suggest Tuberculosis (Need Smears and Cultures)		No Sputum Specimens Required	
<input type="checkbox"/> Infiltrate or consolidation	<input type="checkbox"/> Hilar/mediastinal adenopathy	<input type="checkbox"/> Mark as Class B Other on DS-2054	<input type="checkbox"/> Do Not Mark as Class B Other on DS-2054
<input type="checkbox"/> Cavitory lesion	<input type="checkbox"/> Nodular findings	<input type="checkbox"/> Cardiac	<input type="checkbox"/> Pleural thickening
<input type="checkbox"/> Nodule(s) or mass with poorly defined margins (such as tuberculoma)	<input type="checkbox"/> Discrete linear opacity	<input type="checkbox"/> Musculoskeletal	<input type="checkbox"/> Diaphragmatic tenting
<input type="checkbox"/> Pleural effusion (perform lateral or decubitus radiograph or ultrasound, if needed)	<input type="checkbox"/> Discrete nodule(s) without calcification	<input type="checkbox"/> Other: specify in Remarks	<input type="checkbox"/> Calcified pulmonary nodule(s)
	<input type="checkbox"/> Volume loss or retraction		<input type="checkbox"/> Calcified lymph node(s)
	<input type="checkbox"/> Other		

Remarks: \_\_\_\_\_  
 Radiologist's Name (Printed) \_\_\_\_\_ Radiologist's Signature (Required) \_\_\_\_\_ Date Interpreted (mm-dd-yyyy) \_\_\_\_\_

**4. Sputum Smears and Cultures Decision**

No, not indicated - Applicant has no signs or symptoms of TB, no known HIV infection, and:  
 X-ray Normal or 'No specimens required' and test for cell-mediated immunity to TB negative (if performed)  
 X-ray Normal or 'No specimens required' and test for cell-mediated immunity to TB positive (if performed)

Yes, are indicated - Applicant has (Mark all that apply):  
 Signs or symptoms of TB  
 Chest X-ray suggests TB  
 Known HIV infection  
 End of treatment cultures

**5. Sputum Smears and Cultures Results**

Sputum Smear Results	Date specimen obtained (mm-dd-yyyy)	Date specimen reported (mm-dd-yyyy)	Positive	Negative
	1.			
2.				
3.				

Sputum Culture Results	Date specimen obtained (mm-dd-yyyy)	Date specimen reported (mm-dd-yyyy) *Date of exam on DS 2054	Positive	Negative	NTM	Contaminated
	1.					
2.						
3.						

DS-3030  
06-2014

Page 1 of 4

**6. Tuberculosis Classification**  
 Applicants may have more than one TB Classification. However, they cannot be classified as both Class B1 TB and Class B2 TB. In addition, applicants cannot be classified as Class B3 TB. Contact Evaluation if they are Class A or Class B1 TB, Extrapulmonary.

**No TB Classification**  
 CXR not suggestive of tuberculosis, no signs or symptoms, no known HIV infection, TST or IGRA negative (if performed), not a contact

**Class A**  
 Applicant has tuberculosis disease

**Class B1 TB, Pulmonary**  
 CXR suggests tuberculosis, or signs and symptoms, or known HIV infection and sputum smears and cultures are negative and not a clinically diagnosed case.

**Class B1 TB, Extrapulmonary**  
 Applicants with evidence of extrapulmonary tuberculosis. The anatomic site of infection should be documented.  
 Anatomic Site of Disease \_\_\_\_\_  
 No treatment  
 Current treatment  
 Completed treatment

**Class B2 TB, LTBI Evaluation**  
 Applicants who have a tuberculin skin test  $\geq 10$  mm or positive IGRA but otherwise have a negative evaluation for tuberculosis. Contacts with TST  $\geq 5$  mm or positive IGRA should receive this classification (if they are not already Class B1 TB, Pulmonary).  
 No LTBI treatment  
 Current LTBI treatment (Indicate medications in Part 7)  
 Completed LTBI treatment (Indicate medications in Part 7)

**Class B3 TB, Contact Evaluation**  
 Applicants who are a recent contact of a known tuberculosis case.  
 No preventive treatment  
 Current preventive treatment (Indicate medications in Part 7)  
 Completed preventive treatment (Indicate medications in Part 7)

Source Case:  
 Name \_\_\_\_\_  
 Alien Number \_\_\_\_\_  
 Relationship to Contact \_\_\_\_\_  
 Date Contact Ended (mm-dd-yyyy) \_\_\_\_\_

Type of Source Case TB (Mark only one and attach DST results)  
 Penicillin-susceptible TB  
 MDR TB (resistant to at least INH and rifampin)  
 Drug-resistant TB other than MDR TB  
 Culture negative  
 Culture results not available

Remarks: \_\_\_\_\_

DS-3030

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U.S. Department of State  
**TUBERCULOSIS WORKSHEET**  
 For Use with DS-2054

OMB No. 1405-0113  
 EXPIRATION DATE: 09/30/2017  
 ESTIMATED BURDEN: 20 MINUTES  
 (See Page 2 - Back of Form)

Photo

Name (Last, First, MI)		Age
Birth Date (mm-dd-yyyy)	Passport Number	Alien (Case) Number

**1. Test for Cell-Mediated Immunity to Tuberculosis**

Required for applicants 2 through 14 years of age where WHO-estimated TB rate  $\geq 20$  per 100,000 and contacts; perform one type only.

<input type="checkbox"/> TST	Date applied (mm-dd-yyyy) _____	<input type="checkbox"/> QFT	Nil Value: IU _____
	Results (mm) _____		TB Response: TB minus nil IU/ml _____
<input type="checkbox"/> IGRA	Date drawn (mm-dd-yyyy) _____	<input type="checkbox"/> T-Spot	Nil Value: Number of cells _____
<input type="checkbox"/> Positive			TB Response: Higher of
<input type="checkbox"/> Negative			Panel A or Panel B minus nil value _____
<input type="checkbox"/> Indeterminate, Borderline, or Equivocal			

**2. Chest X-Ray Indication (Mark all that apply)**

<input type="checkbox"/> Chest X-Ray not indicated	<input type="checkbox"/> Known HIV infection	_____
<input type="checkbox"/> Age $\geq 15$ years	<input type="checkbox"/> TST $\geq 10$ mm or IGRA positive	
<input type="checkbox"/> Signs or symptoms of tuberculosis	<input type="checkbox"/> Contact: TST $\geq 5$ mm or IGRA positive	

Date Chest X-Ray Taken (mm-dd-yyyy)

**3. Chest X-Ray Findings**

Normal Findings       Abnormal Findings (Indicate category and finding, checking all that apply in the tables below)

**Can Suggest Tuberculosis (Need Smears and Cultures)**

<input type="checkbox"/> Infiltrate or consolidation	<input type="checkbox"/> Hilar/mediastinal adenopathy
<input type="checkbox"/> Cavitary lesion	<input type="checkbox"/> Miliary findings
<input type="checkbox"/> Nodule(s) or mass with poorly defined margins (such as tuberculoma)	<input type="checkbox"/> Discrete linear opacity
<input type="checkbox"/> Pleural effusion (perform lateral or decubitus radiograph or ultrasound, if needed)	<input type="checkbox"/> Discrete nodule(s) without calcification
	<input type="checkbox"/> Volume loss or retraction
	<input type="checkbox"/> Other

**No Sputum Specimens Required**

<b>Mark as Class B Other on DS-2054</b>	<b>Do Not Mark as Class B Other on DS-2054</b>
<input type="checkbox"/> Cardiac	<input type="checkbox"/> Pleural thickening
<input type="checkbox"/> Musculoskeletal	<input type="checkbox"/> Diaphragmatic tenting
<input type="checkbox"/> Other, specify in Remarks	<input type="checkbox"/> Calcified pulmonary nodule(s)
	<input type="checkbox"/> Calcified lymph node(s)

Remarks

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## 6. Tuberculosis Classification

Applicants may have more than one TB Classification. However, they cannot be classified as both Class B1 TB and Class B2 TB. In addition, applicants cannot be classified as Class B3 TB, Contact Evaluation if they are Class A or Class B1 TB, Extrapulmonary.

- No TB Classification**  
CXR not suggestive of tuberculosis, no signs or symptoms, no known HIV infection, TST or IGRA negative (*if performed*), not a contact
- Class A**  
Applicant has tuberculosis disease
- Class B1 TB, Pulmonary**  
CXR suggests tuberculosis, or signs and symptoms, or known HIV infection and sputum smears and cultures are negative and not a clinically diagnosed case.
- Class B1 TB, Extrapulmonary**  
Applicants with evidence of extrapulmonary tuberculosis. The anatomic site of infection should be documented.
- Anatomic Site of Disease \_\_\_\_\_
- No treatment  
 Current treatment  
 Completed treatment
- Class B2 TB, LTBI Evaluation**  
Applicants who have a tuberculin skin test  $\geq 10$  mm or positive IGRA but otherwise have a negative evaluation for tuberculosis. Contacts with TST  $\geq 5$  mm or positive IGRA should receive this classification (*if they are not already Class B1 TB, Pulmonary*).
- No LTBI treatment  
 Current LTBI treatment (*Indicate medications in Part 7*)  
 Completed LTBI treatment (*Indicate medications in Part 7*)
- Class B3 TB, Contact Evaluation**  
Applicants who are a recent contact of a known tuberculosis case.
- No preventive treatment  
 Current preventive treatment (*Indicate medications in Part 7*)  
 Completed preventive treatment (*Indicate medications in Part 7*)

# Electronic Disease Notification



## EDN Tuberculosis Follow-up Guide

This guidance document is intended for EDN users who use the TB follow-up module in EDN. The guide is designed to train EDN users on worksheet follow-up reporting and worksheet completion.

National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)  
Division of Global Migration and Quarantine

December 28, 2011

Version 1.0



Mayo Clinic Center for Tuberculosis

# Class B Follow-up

EDN TB Follow-Up Worksheet				Last reviewed: 8/21/2013
<b>A. Demographic</b>				
A1. Name (Last, First, Middle):	A2. Alien #:	A3. Visa type:	A4. Initial U.S. entry date:	
A5. Age:	A6. Gender:	A7. DOB: _____	A8. TB Class:	
A9. Country of examination:		A10. Country of birth:		
A11a. Address:		A12. a. Sponsor agency name:		
A11b. Phone:		b. Phone(s):		
A11c. Other:		c. Address:		
<b>B. Jurisdictional Information</b>				
B1. Arrival jurisdiction:		B2. Current jurisdiction:		
<b>C. U.S. Evaluation</b>				
C1. Date of initial U.S. medical evaluation: _____				
<b>Mantoux Tuberculin Skin Test (TST)</b>		<b>Interferon-Gamma Release Assay (IGRA)</b>		
C2a. Was a TST administered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		C3a. Was IGRA administered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		
IF YES, C2b. TST placement date: _____		IF YES, C3b. Date collected: _____ Date unknown		
<input type="checkbox"/> Placement date unknown		C3c. IGRA brand: <input type="checkbox"/> QuantiFERON® <input type="checkbox"/> T-SPOT		
C2c. TST mm: _____ Unknown		<input type="checkbox"/> Other (specify): _____		
C2d. TST interpretation: <input type="checkbox"/> Positive <input type="checkbox"/> Negative		C3d. Result: <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Indeterminate		
<input type="checkbox"/> Unknown		<input type="checkbox"/> Invalid <input type="checkbox"/> Unknown		
C2e. History of Previous Positive TST <input type="checkbox"/>		C3e. History of previous positive IGRA <input type="checkbox"/>		
<b>U.S. Review of Pre-Immigration CXR</b>		<b>U.S. Domestic CXR</b>		
C4. Pre-Immigration CXR available? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Verifiable		C7. U.S. domestic CXR done? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		
C5. U.S. interpretation of pre-immigration CXR:		C8. Date of U.S. CXR: _____		
<input type="checkbox"/> Normal		C9. Interpretation of U.S. CXR:		
Abnormal (must select one below):		<input type="checkbox"/> Normal		
<input type="checkbox"/> Not consistent with active TB		Abnormal (must select one below):		
<input type="checkbox"/> Non-cavitary, consistent with TB		<input type="checkbox"/> Not consistent with active TB		
<input type="checkbox"/> Cavitary, consistent with TB		<input type="checkbox"/> Non-cavitary, consistent with TB		
<input type="checkbox"/> Poor Quality		<input type="checkbox"/> Cavitary, consistent with TB		
<input type="checkbox"/> Unknown		<input type="checkbox"/> Unknown		
C6. Other pre-immigration CXR abnormalities:		C10. U.S. domestic CXR abnormalities:		
<input type="checkbox"/> Volume loss <input type="checkbox"/> Infiltrate <input type="checkbox"/> Granuloma(s)		<input type="checkbox"/> Volume loss <input type="checkbox"/> Infiltrate <input type="checkbox"/> Granuloma(s)		
<input type="checkbox"/> Adenopathy <input type="checkbox"/> Other (specify) _____		<input type="checkbox"/> Adenopathy <input type="checkbox"/> Other (specify) _____		
<b>U.S. Review of Pre-Immigration Treatment</b>				
C12a. Completed treatment pre-immigration? <input type="checkbox"/> Yes <input type="checkbox"/> No		C13. Arrived on treatment? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		
IF YES, <input type="checkbox"/> Treated for TB disease <input type="checkbox"/> Treated for LTBI		IF YES, <input type="checkbox"/> TB disease <input type="checkbox"/> LTBI		
C12b. Treatment start date: _____ Start date unknown		C13a. Start date: _____ Start date unknown		
C12c. Treatment end date: _____ End date unknown		C14. Pre-Immigration treatment concerns?		
C12d. Treatment reported by:		<input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Treatment documented on DS forms		IF YES,		
<input type="checkbox"/> Patient reported treatment completion at or before panel physician examination		<input type="checkbox"/> Treatment duration too short		
<input type="checkbox"/> Both documented on DS forms & patient reported		<input type="checkbox"/> Incorrect treatment regimen		
<input type="checkbox"/> Unknown		<input type="checkbox"/> Other, please specify: _____		
C12e. Standard TB treatment regimen was administered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unable to verify				

Alien #		EDN TB Follow-Up Worksheet (Cont)				Last reviewed: 8/21/2013
C15. U.S. Microscopy/Bacteriology*		Sputa collected in U.S.? <input type="checkbox"/> Yes <input type="checkbox"/> No				*Cover all results regardless of sputa collection method
#	Date Collected	AFB Smear		Sputum Culture		Drug Susceptibility Testing
1	____/____/____	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not Done <input type="checkbox"/> Unknown	<input type="checkbox"/> NTM <input type="checkbox"/> Contaminated <input type="checkbox"/> Not Done	<input type="checkbox"/> MTB Complex <input type="checkbox"/> Negative <input type="checkbox"/> Unknown	<input type="checkbox"/> MDR-TB <input type="checkbox"/> Mono-INH <input type="checkbox"/> No DR	<input type="checkbox"/> Mono-RIF <input type="checkbox"/> Other DR <input type="checkbox"/> Not Done
2	____/____/____	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not Done <input type="checkbox"/> Unknown	<input type="checkbox"/> NTM <input type="checkbox"/> Contaminated <input type="checkbox"/> Not Done	<input type="checkbox"/> MTB Complex <input type="checkbox"/> Negative <input type="checkbox"/> Unknown	<input type="checkbox"/> MDR-TB <input type="checkbox"/> Mono-INH <input type="checkbox"/> No DR	<input type="checkbox"/> Mono-RIF <input type="checkbox"/> Other DR <input type="checkbox"/> Not Done
3	____/____/____	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not Done <input type="checkbox"/> Unknown	<input type="checkbox"/> NTM <input type="checkbox"/> Contaminated <input type="checkbox"/> Not Done	<input type="checkbox"/> MTB Complex <input type="checkbox"/> Negative <input type="checkbox"/> Unknown	<input type="checkbox"/> MDR-TB <input type="checkbox"/> Mono-INH <input type="checkbox"/> No DR	<input type="checkbox"/> Mono-RIF <input type="checkbox"/> Other DR <input type="checkbox"/> Not Done
<b>D. Evaluation Disposition</b>						
D1. Evaluation disposition date: _____						
D2. Evaluation disposition:						
<input type="checkbox"/> Completed evaluation <input type="checkbox"/> Initiated Evaluation / Not completed <input type="checkbox"/> Did not initiate evaluation						
If evaluation was completed, was treatment recommended? <input type="checkbox"/> Yes <input type="checkbox"/> No						
If evaluation was NOT completed, why not?						
<input type="checkbox"/> Not Located <input type="checkbox"/> Moved within U.S., transferred to: _____						
<input type="checkbox"/> Lost to Follow-Up <input type="checkbox"/> Moved outside U.S.						
<input type="checkbox"/> Refused Evaluation <input type="checkbox"/> Died						
<input type="checkbox"/> Unknown <input type="checkbox"/> Other, specify _____						
D3. Diagnosis <input type="checkbox"/> Class 0 - No TB exposure, not infected <input type="checkbox"/> Class 1 - TB exposure, no evidence of infection						
<input type="checkbox"/> Class 2 - TB infection, no disease <input type="checkbox"/> Class 3 - TB, TB disease						
<input type="checkbox"/> Class 4 - TB, inactive disease <input type="checkbox"/> Pulmonary <input type="checkbox"/> Extra-pulmonary <input type="checkbox"/> Both sites						
D. If diagnosed with TB disease, <input type="checkbox"/> RVCT Reported D5. RVCT #: _____ RVCT # unknown						
<b>E. U.S. Treatment</b>						
E1. U.S. treatment initiated: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown						
IF NO, specify the reason:						
<input type="checkbox"/> Patient declined against medical advice <input type="checkbox"/> Lost to follow-up <input type="checkbox"/> Moved within U.S., transferred to: _____						
<input type="checkbox"/> Died <input type="checkbox"/> Moved outside the U.S. <input type="checkbox"/> Other (specify) _____						
<input type="checkbox"/> Unknown						
IF YES: <input type="checkbox"/> TB disease <input type="checkbox"/> LTBI						
E2. Treatment start date: _____						
E3. U.S. treatment completed: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown						
IF NO, specify the reason:						
<input type="checkbox"/> Patient stopped against medical advice <input type="checkbox"/> Lost to follow-up <input type="checkbox"/> Adverse effect						
<input type="checkbox"/> Provider decide <input type="checkbox"/> Moved outside the U.S. <input type="checkbox"/> Moved within U.S., transferred to: _____						
<input type="checkbox"/> Died <input type="checkbox"/> Unknown <input type="checkbox"/> Other (specify) _____						
If treatment was completed, E4. Treatment completion date: _____						
If treatment was initiated but NOT completed, E5. Treatment end date: _____						
<b>F. Comments</b>						
<b>G. Screen Site Information</b>						
Provider's Name:						
Clinic Name:						
Telephone Number:						

# Follow-up Instructions

	Description	Comment
<b>Overseas CXR Available – Yes, No, Unknown, Not Verifiable</b>	Overseas chest X-ray, if physically available.	Please verify that the chest X-ray has both the name and date of birth of the individual. If this is not documented on the X-ray, please indicate “not verifiable.”
<b>U.S. Interpretation of Overseas CXR – Normal, Abnormal, Poor Quality, Unknown</b>	The U.S. clinician’s interpretation of the chest X-ray that was taken overseas by the panel physician.	If no CXR is physically available then indicate “unknown.” Please do not transcribe what was reported on the overseas medical evaluation to complete this section.
<b>Overseas CXR Abnormal Findings – Abnormal, Cavity, Fibrosis, Infiltrate, Granuloma(ta), Adenopathy, Other (Specify)</b>	The U.S. clinician’s interpretation of abnormalities found on the overseas CXR. If a U.S. physician interprets the overseas CXR as abnormal, indicate type of abnormality(-ies) reported. Check all that apply.	If no CXR is available, leave this section blank. Please specify other found abnormalities such as miliary in the comments section. Do not transcribe what was reported on the overseas medical evaluation to complete this section.
	Description	Comment
<b>U.S. CXR Comparison to Overseas CXR</b> Stable, Worsening, Improving, Unknown	Comparison of Overseas chest X-ray findings with U.S. chest X-ray findings.	The section should be completed only if an overseas CXR is physically available and verifiable (the name and date of birth are on the CXR).

Classification of Persons Exposed to and/or Infected with <i>M. tuberculosis</i>	Description	Comments
<b>Class 0</b>	No TB Exposure	<ul style="list-style-type: none"> <li>Negative reaction to tuberculin skin test or IGRA</li> <li>No history of exposure</li> </ul>
<b>Class 1: TB exposure, no evidence of infection</b>	Exposure to TB but not latent TB infection	<ul style="list-style-type: none"> <li>Negative reaction to tuberculin skin test or IGRA</li> <li>No evidence of infection.</li> <li>History of exposure to tuberculosis but negative reaction to the tuberculin skin test</li> </ul>
<b>Class 2: TB infection, no disease</b>	Latent TB Infection (LTBI)	<ul style="list-style-type: none"> <li>Positive reaction to the tuberculin skin test</li> <li>Negative microscopy/bacteriology results</li> <li>No clinical or radiographic evidence of tuberculosis</li> </ul>
<b>Class 3: TB, active disease</b>	Active TB disease	<ul style="list-style-type: none"> <li>Clinically active tuberculosis</li> <li>Person must have clinical and/or radiologic evidence of tuberculosis <ul style="list-style-type: none"> <li>Established most definitively by isolation of <i>M. tuberculosis</i></li> <li>In absence for a positive culture for <i>M. tuberculosis</i>, persons in this class must have a positive reaction to the tuberculin test</li> </ul> </li> <li>Class 3 is further defined as pulmonary, extra-pulmonary, both sites on the follow-up form.</li> </ul>
<b>Class 4: Tuberculosis, inactive disease</b>	Old, healed, inactive TB disease	<ul style="list-style-type: none"> <li>History of previous episode(s) of tuberculosis or abnormal stable radiographic findings</li> <li>Positive reaction to tuberculin skin test</li> <li>Negative microscopy/bacteriology</li> <li>No clinical and/or radiographic evidence of current disease</li> </ul>

# Performance of Overseas TB Screening Program (Vietnam, 2006-07)

- 14,098 applicants
- 1179 CXR c/w active TB
- 188 culture positive

<u>Culture</u>	<u>Smear</u>	
	Neg	Pos
Neg	977	19
Pos	120	66

Screening with Smear:  
Sens = 34%      Spec = 98%  
PPV = 77%      NPV = 89%

Maloney, et al. Arch Intern Med 2006

# Role of Civil Surgeon (Adjustment of Status)

- Conduct medical evaluation
  - Class A diseases
  - Class B diseases
- Ensure immunizations up-to-date
- Obtain consultation as necessary
- Complete I-693



A. **Tuberculosis (TB):** An initial screening test, either a tuberculin skin test (TST) or an interferon gamma release assay (IGRA), is required for all applicants 2 years of age and older; for children under 2 years of age, see the *Technical Instructions*. The civil surgeon should perform only one type of initial screening test, followed by further evaluation if needed (chest X-ray).

(1) **Tuberculin Skin Test:**

Not administered (TST exception; please explain in Remarks section below)

Date TST Applied (mm/dd/yyyy)  Date TST Read (mm/dd/yyyy)  Size of Reaction (mm)

Result:  Negative (4mm or less of induration)  Positive ( $\geq$  5mm; chest X-ray required)

(2) **Interferon Gamma Release Assay** (for acceptable IGRA's, consult the *Technical Instructions* and any updates posted on the CDC's Web site):

Not administered (IGRA exception; please explain in Remarks section below)

Select only one box.

QuantiFERON

T-Spot

Date Blood Sample Drawn (mm/dd/yyyy)

Date Blood Sample Drawn (mm/dd/yyyy)

Result:  Negative (including indeterminate, or borderline/equivocal) (no chest X-ray required)

Positive (chest X-ray required)

(3) **Initial Screening Test Result and Chest X-Ray Determinations:**

Chest X-ray not required (medically cleared for TB for USCIS)

Chest X-ray required due to initial screening test results

Chest X-ray required due to TB signs or symptoms, or due to immunosuppression (such as HIV)

Chest X-ray required due to TST or IGRA exception (Clearly specify the TST or IGRA exception in the Remarks section below.)

(4) **Chest X-Ray:** Required based on TST or IGRA result, or if specific TST or IGRA exceptions apply, or for an applicant with TB signs or symptoms or immunosuppression (such as HIV).

Date Chest X-Ray Taken (mm/dd/yyyy)  Date Chest X-Ray Read (mm/dd/yyyy)

Result:  Normal  Abnormal (describe results in Remarks section below.)

TB Classification/Findings (Select only if chest X-ray was performed):

No Class A or Class B TB

Class B2 Pulmonary TB

Class A Pulmonary TB Disease

Class B, Other Chest Condition (non-TB)

Class B1 Pulmonary TB

Class B, Latent TB Infection (Answer the following question.)

Class B1 Extra Pulmonary TB

Was applicant referred for treatment (not required to complete Form I-693)?  Yes  No



**Part 6. Referral Evaluation (To be completed by the health department or other doctor performing the referral evaluation)**

The applicant identified on this Form I-693 was referred to me by the civil surgeon named in Part 4. of this Form I-693. I have provided appropriate evaluation/treatment, having made every reasonable effort to verify that the person whom I have evaluated/ treated is the person identified in Part 1.

**1. Type or print full name of evaluating physician or health department**

Family Name (Last Name)

Given Name (First Name)

Middle Name

**2. Address**

Street Number and Name

Apt. Ste. Flr. Number

City or Town

State

ZIP Code

**3. Signature**

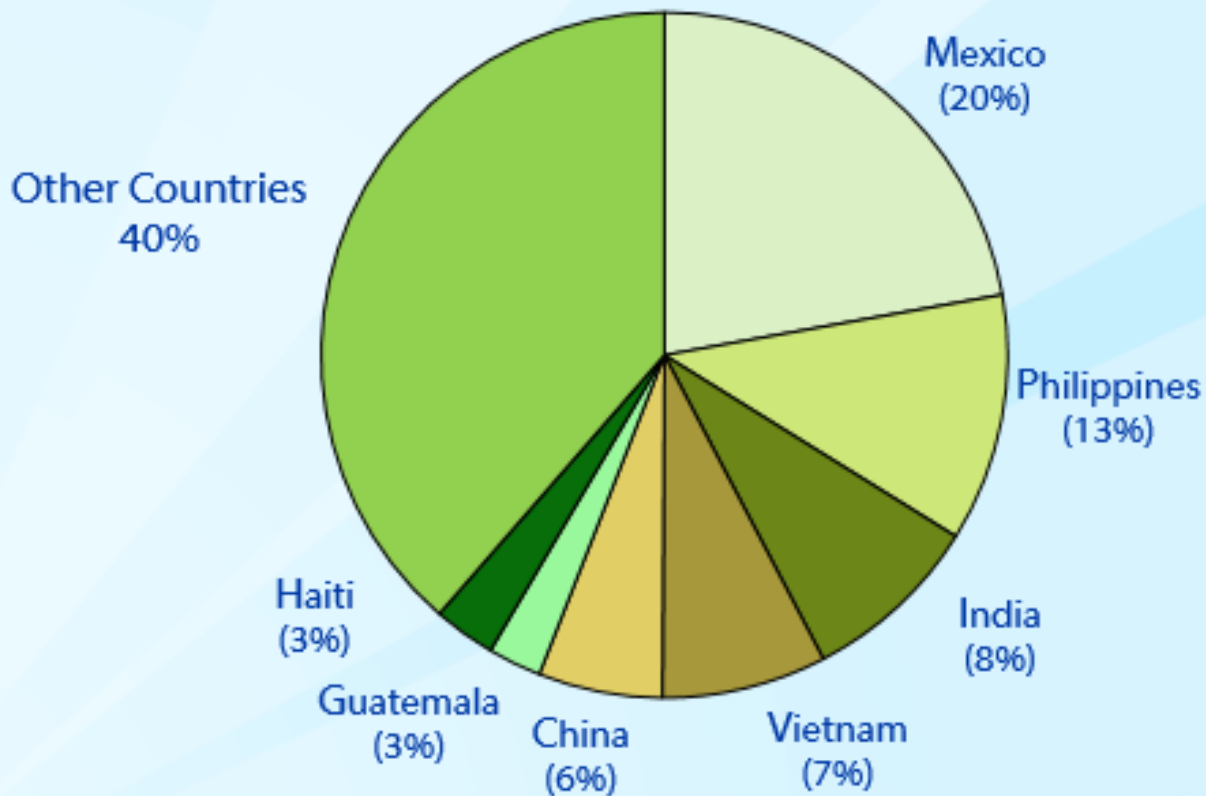
Date Signed (mm/dd/yyyy)

**4. Name of Medical Practice or Health Department**

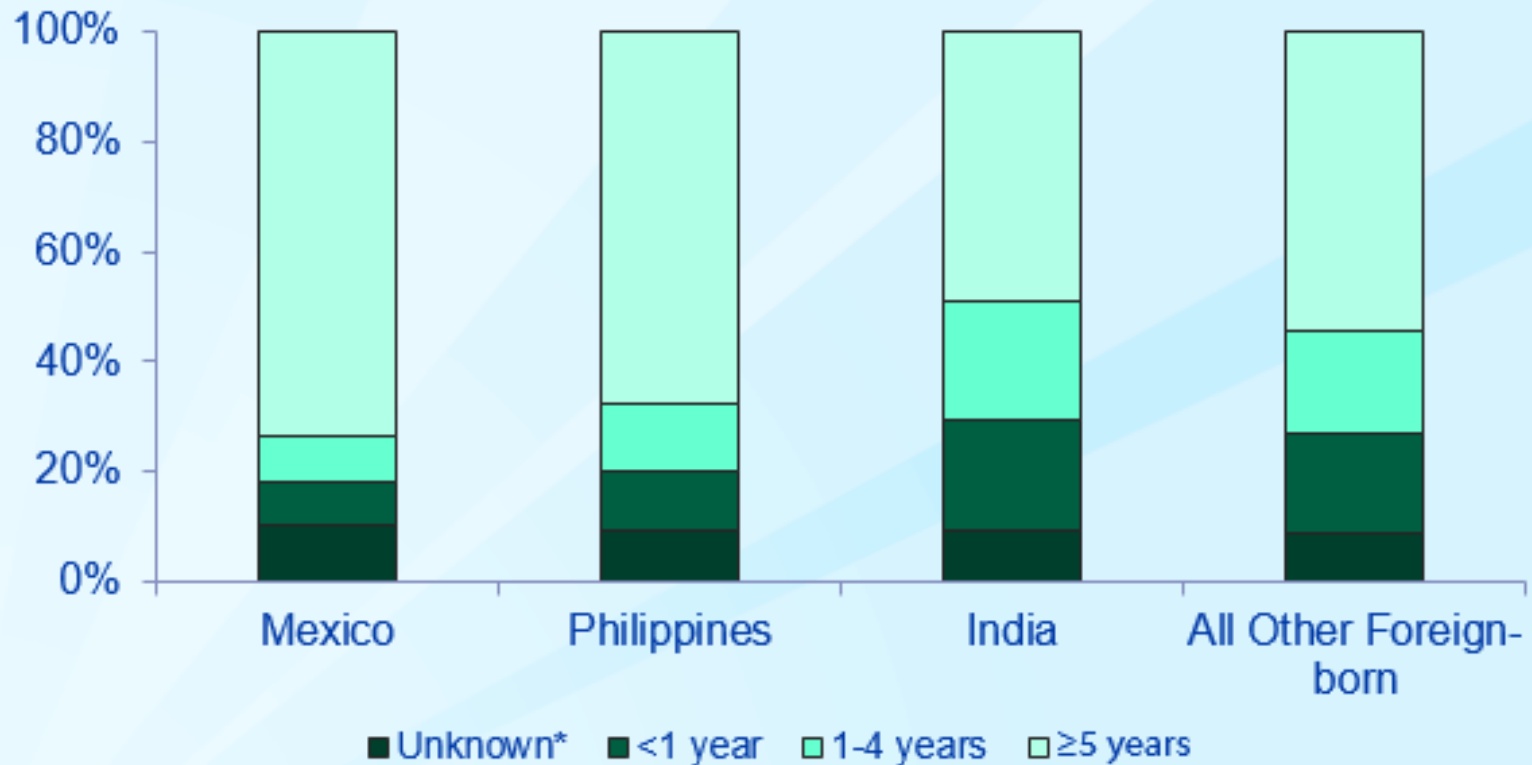
**5. Daytime Telephone Number**

**6. Remarks:** If you need more space, attach a separate sheet of paper; type or print the applicant's name and Alien Registration Number (A-Number) (if any), at the top of each sheet; and indicate the Page Number, Part Number, and Item Number to which your answer refers.

## Countries of Birth of Foreign-born Persons Reported with TB, United States, 2013



## Percent of Foreign-born with TB by Time of Residence in U.S. Prior to Diagnosis, 2013



\*Foreign-born TB patients for whom information on length of residence in the U.S. prior to diagnosis is unknown or missing.



# Challenges to Screening

- Language Barriers
  - Bilingual literature, interpreters
- Trust and Cultural Beliefs
  - Word of mouth, education, informal community leaders
- TB skin testing
  - Requires 2 visits – incentives?
  - Alternative - IGRA

# False-Positive TST Reactions

- Improper placement/interpretation
- Nontuberculous mycobacteria
- BCG vaccination
  - Reactivity in BCG recipients decreases over time
  - TST result interpreted independent of BCG status

# Interferon-gamma Release Assay

- QuantiFERON<sup>®</sup>-Gold
  - FDA approved May 2, 2005
  - Antigens: ESAT-6, CFP-10, mitogen, nil
- QuantiFERON<sup>®</sup> Gold-In-Tube
  - FDA approved Oct 12, 2007
  - Antigens: ESAT-6, CFP-10, TB7.7, mitogen, nil
- T-SPOT<sup>®</sup>.TB
  - Approved for use in U.S. 2008
  - Elispot technique to quantitate cells releasing IFN- $\gamma$  from whole blood mononuclear cells, incubated with similar antigens

# Interferon-gamma Release Assays

- Results comparable to TST
- Higher sensitivity for active TB
- Higher specificity (BCG)
- Higher cost



# Summary

- TB remains an important global problem
- Foreign-born US cases now exceeds US-born cases
- Limitations on available screening methods