Civil Surgeon Training
Los Angeles County

Tuberculosis and Form I-693

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National Center for Emerging and Zoonotic Infectious Diseases
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Topics

- Tuberculosis (TB) incidence rates in the world and the United States
- 2008 TB Technical Instructions (TI)
- 2009 Update re Interferon Gamma Release Assays (IGRA)
- Pregnancy and radiation
- Referrals
- TB classifications
Objectives

• Know that majority of TB cases in United States are in the foreign-born
• Understand can use IGRA testing
• Know that pregnant applicants must undergo a chest radiograph before exam is completed
• Understand when referrals are required versus recommended
• Know how to refer to TB TI to classify TB
Estimated TB incidence rates, 2012

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.


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Countries of Birth of Foreign-born Persons Reported with TB, United States, 2014

- Mexico (21%)
- Philippines (12%)
- India (8%)
- Vietnam (8%)
- China (7%)
- Guatemala (3%)
- Haiti (3%)
- Other Countries (39%)
2015 TB Statistics (Preliminary)

• Rates
  – Overall rate leveled off at 3.0 TB cases per 100,000 population
  – U.S.-born rate unchanged at 1.2/100,000
  – Foreign-born decreased from 15.4 to 15.1/100,000

• Number of cases
  – Overall: 9563 (↑ from 9406)
  – Foreign-born: 6335,↑ from 6223
  – U.S.-born: 3201,↑ from 3177
Civil Surgeon TB TI

• May 1, 2008: Tuberculosis TI released

• November 1, 2009: Update re Interferon Gamma Release Assay (IGRA)

• CDC/DGMQ website contains
  – TIs for all parts of exam
  – Updates

• USCIS website contains
  – I-693 form and instructions
Required Pulmonary TB Work-Up

• Cell-mediated immunity testing for applicants 2 years of age and older
  – TST or IGRA

• Chest radiograph (CXR) if TST $\geq$ 5 mm or IGRA positive

• Sputum smears and cultures if
  – Chest radiograph suggestive of TB
  – TB signs or symptoms
  – Immunosuppression (e.g., HIV infection, 15 mg prednisone for $\geq$ 1 month, history of organ transplant)
Required Pulmonary TB Work-Up, Cont’d.

• Drug susceptibility testing if culture positive

• Proper TI/I-693 form classification of TB (not American Thoracic Society system)

• Directly observed therapy (DOT) throughout treatment for Class A TB (smear or culture positive)
TB History and Physical Exam

• Medical history
  – Hospitalizations, respiratory illnesses
  – CXRs & treatment records

• Review of systems
  • Cough > 2-3 weeks, hemoptysis, fever, night sweats, weight loss

• Physical exam for pulmonary and extrapulmonary TB
  • Chest examination for TB
  • Lymph nodes
  • Hepatomegaly, splenomegaly
  • Neck stiffness
TB Skin Test (TST)

- Test everyone ≥ 2 years of age
- Use Mantoux technique*
- Trained HCW to administer and read (no self-reading)*
- Perform CXR if induration ≥ 5 mm

*See Appendix A, 2008 TB TI for Civil Surgeons
IGRA

• Blood test
• Measures a component of cell-mediated immune reactivity to *Mycobacterium tuberculosis* in fresh whole blood

• Types
  – QuantiFERON-TB Gold®
  – QuantiFERON-TB Gold® In Tube (QFT-GIT)
  – T-SPOT ®

• Perform CXR if IGRA positive
Cell-Mediated Immunity Tests

• May defer in these circumstances
  – Documentation of prior TST result of > 5mm, signed by health-care provider
  – Oral history of severe reaction with blistering to prior TST
  – Documentation of prior positive IGRA (most recent result), signed by health-care provider

• In above circumstances, perform CXR next
  – Do not perform another type of cell-mediated immunity test to achieve negative result
Part 5. Civil Surgeon Worksheet (To be completed by the civil surgeon, according to the Technical Instructions at www.cdc.gov/immigrantrefugeehealth/exams/ti/civil/technical-instructions-civil-surgeons.html)

1. Communicable Disease of Public Health Significance

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)
- ☐ 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 (≥ 5mm; chest X-ray required)

(2) Interferon Gama 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

  Date Blood Sample Drawn (mm/dd/yyyy)

  ☐ T-Spot

  Date Blood Sample Drawn (mm/dd/yyyy)

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

  ☐ Positive (chest X-ray required)
Cell-Mediated Immunity Tests, Cont’d.

• Prior BCG vaccination
  – Does not change testing requirement
  – Does not change action based on test results

• Indeterminate or borderline/equivocal IGRA result equals a negative result in this screening population

• If test negative but applicant has TB signs or symptoms or is immunosuppressed, CXR is required
CXR

• Required for all applicants with TST $\geq$ 5mm induration or positive IGRA

• Required for applicants with TST < 5 mm (including 0 mm) or negative IGRA with
  • TB signs or symptoms OR
  • Immunosuppression
Pregnancy and Radiation

- 2008 TB TI
  - CXR required before exam can be completed
  - CXR can be performed during or after pregnancy
  - Why?
    - Caretaker TB transmission to child

- Safety of fetus must be considered
  - Adult PA CXR radiation dose of 0.02 millisieverts is less than a U.S. coast-coast flight
  - Childhood cancer
Pregnancy and Radiation, Cont’d.

- Requirements if CXR performed during pregnancy
  - Applicant must be advised of risk
  - Applicant must consent to radiation
  - Applicant should sign radiation consent form*
  - Technologist should apply double layer wrap-around lead shield to protect pregnancy during exposure*

*Advise that record contain consent form and technologist clearly document double lead shielding
“CXR should be interpreted by a radiologist or other qualified physician who is trained and experienced in reading chest radiographs demonstrating TB or other diseases of the lung”*

*2008 TB Technical Instructions
Posteroanterior (PA) CXR on Asymptomatic Applicant

Source: Servicios Medicos de la Frontera Panel Site, Ciudad Juarez, Mexico
Referral to TB Control Program of Health Department (HD) required if CXR suggestive of active or inactive* TB disease or applicant has TB signs or symptoms

Radiologist should use Glossary of Findings in Appendix B, 2008 TB TI for Civil Surgeons
Why Refer to HD?

• TB significant public health problem, especially in foreign-born
• TB patients uncommon in private practice
• TB diagnosis and treatment issues have increased in complexity
• Directly observed therapy needed for TB disease
• HD conducts TB disease contact and source investigations
Form I-693, Part 5, TB Section, Cont’d.

(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)    (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 A Pulmonary TB Disease
☐ Class B1 Pulmonary TB
☐ Class B1 Extra Pulmonary TB
☐ Class B2 Pulmonary TB
☐ Class B, Other Chest Condition (non-TB)
☐ Class B, Latent TB Infection (Answer the following question.)

Was applicant referred for treatment (not required to complete Form I-693)?

☐ Yes    ☐ No
Required vs. Recommended Referral to HD TB Control Program

- **Required referral**
  - CXR suggestive of TB disease (active or inactive)
  - TB signs or symptoms, regardless of TST/IGRA result or CXR finding
  - Use referral portion of Part 5, Form I-693 and await written response

- **Recommended referral**
  - Class B, Latent TB Infection Needing Evaluation for Treatment
  - Do NOT use referral portion of Part 5, Form I-693
TST or IGRA performed on all applicants ≥ 2 years of age.

* Chest radiograph performed if TST ≥ 5mm induration/IGRA positive, or if applicant symptomatic or immunosuppressed.
TB Classifications in 2008 TI*

• Class A Pulmonary TB Disease
• Class B1 Pulmonary TB
• Class B1 Extrapulmonary TB
• Class B2 Pulmonary TB
• Class B, Latent TB Infection
• Class B, Other Chest Condition (Non-TB)

*Only mark classification if CXR is obtained
## TB Classifications and Actions

<table>
<thead>
<tr>
<th>Classification</th>
<th>Criteria</th>
<th>Refer to Health Dept. (HD) for Further Work-Up</th>
<th>Check TB Class Box on I-693</th>
<th>Clear for TB; Sign I-693</th>
<th>Re-Classify After Rx</th>
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| Class A—Pulmonary TB Disease, Active, Infectious     | • Abnormal chest radiograph(s) suggestive of active TB disease (See Appendix B)  
• Either one or more sputum smears positive for AFB, or one or more cultures positive for *M. tuberculosis complex*                                                                                     | Required 2                                   | Yes                         | No                      | Yes 3                |
| Class B1—Pulmonary TB, Active, Non-infectious        | • Abnormal chest radiograph(s) suggestive of active TB disease (See Appendix B)  
• Three sputum smears negative for AFB and three cultures negative for *M. tuberculosis complex*                                                                                                     | Required 2                                   | Yes                         | Yes                     | No                   |
| Class B1—Extrapulmonary TB, Active, Non-infectious   | • Radiographic or other evidence of extrapulmonary TB disease  
• No pulmonary TB                                                                                                                                                                                   | Required 4                                   | Yes                         | Yes                     | No                   |
| Class B2—Pulmonary TB, Inactive                      | • Abnormal chest radiograph(s) suggestive of inactive TB disease (See Appendix B)  
• No sputum smears or cultures required                                                                                                                                     | Required 2                                   | Yes                         | Yes                     | No                   |
| Class B—Latent TB Infection Needing Evaluation for Treatment (LTBI) | • TST reaction ≥ 10 mm in recent U.S. arrivals (see text)  
• TST reaction ≥ 5 mm in specific groups (see text)  
• No evidence of active TB disease  
• See text for criteria of other LTBI category                                                                                                               | Recommended 6                                 | Yes                         | Yes                     | No                   |
| Class B—Other Chest Condition (non-TB)              | • Abnormal chest radiograph, not suggestive of TB disease, needing follow-up (see Appendix B)                                                                                                            | N/A 7                                        | Yes                         | Yes                     | No                   |

If the applicant has TB signs or symptoms, he or she should be referred to the health department TB Control Program for further evaluation regardless of TST result or chest radiograph appearance.
### TB Classifications and Actions

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| Class A—Pulmonary TB, Active, Infectious            | • Abnormal chest radiograph(s) suggestive of active TB disease (See Appendix B)  
• Either one or more sputum smears positive for AFB, or one or more cultures positive for M. tuberculosi... | Yes                                           | No                          | Yes                       | No                   |
| Class B1—Pulmonary TB, Active, Non-infectious       | • Abnormal chest radiograph(s) suggestive of active TB disease (See Appendix B)  
• Three sputum smears negative for AFB and three cultures negative for M. tuberculosis complex | Yes                                           | Yes                         | No                        |                      |
| Class B1—Extrapulmonary TB, Active, Non-infectious  | • Radiographic or other evidence of extrapulmonary TB disease  
• No pulmonary TB                                                                            | Required 4                                    | Yes                        | Yes                       | No                   |
| Class B2—Pulmonary TB, Inactive                     | • Abnormal chest radiograph(s) suggestive of inactive TB (See Appendix B)  
• No sputum smears or cultures required                                                        | Yes                                           | Yes                        | No                        |                      |
| Class B—Latent TB Infection Needing Evaluation for Treatment (LTBI) | • TST reaction ≥ 10 mm in recent U.S. arrivals (see text)  
• TST reaction ≥ 5 mm in specific groups (see text)  
• No evidence of active TB disease  
• See text for criteria of other LTBI category                                                      | Yes                                           | Yes                        | No                        |                      |
| Class B—Other Chest Condition (non-TB)             | • Abnormal chest radiograph, not suggestive of TB disease, needing follow-up (see Appendix B) | N/A 7                                         | Yes                        | Yes                       | No                   |

If the applicant has TB signs or symptoms, he or she should be referred to the health department TB Control Program for further evaluation regardless of TST result or chest radiograph appearance.
Class A Pulmonary TB (Inadmissible)

• Abnormal CXR suggestive of pulmonary TB OR TB signs or symptoms
• Required referral to HD
  – HD sputum smear and/or culture positive
  – Treatment must be completed
• Returned to civil surgeon who then can sign the I-693 form
Class B1 TB

• Class B1 Pulmonary TB
  • Abnormal CXR suggestive of active TB
  • Required referral to HD
    – HD sputum smears and cultures negative x 3

• Class B1 Extrapulmonary TB
  • No pulmonary component
  • Required referral to health department for evaluation

• Neither B1 Class is inadmissible
Class B2 Pulmonary TB

- Abnormal CXR suggested inactive TB
- Referred to health department
- Health department decided whether smears and cultures indicated
- If no smears or cultures performed, civil surgeon can classify as B2 Pulmonary TB
- Admissible
Latent TB Infection (LTBI) Needing Evaluation for Treatment

• Most common criteria in status adjusters
  – TST ≥ 10mm or IGRA positive
  – Applicant from country with high TB prevalence
  – Applicant in U.S. < 5 years

• Recommended referral for LTBI evaluation
  – Referral does not defer medical clearance
  – LTBI Rx does not defer medical clearance

• Admissible
Latent TB Infection, Cont’d.

- Emphasis placed on clear communication between civil surgeon and health department

- Other LTBI criteria for recommended referral *
  - Applicant meets other 10 mm cut-off criteria**
    - Diabetes mellitus
    - Child < 4 years of age
  - Applicant meets 5 mm cut-off criteria**
    - Immunosuppressed
    - Status post organ transplantation
    - Recent contact to a TB case

*See pp. 21-22 of 2008 TB TI; ** Or IGRA positive
Other Classifications on I-693 Form

- No Class A or Class B TB
  - TST < 10 mm and CXR normal
  - No criteria for $\geq 5$ mm TST cut-off for LTBI
  - No TB signs or symptoms

- Other Chest Condition, non-TB
Reminder about TB Classifications

Only Class A TB (smear and/or culture positive) is inadmissible and requires the civil surgeon to defer signing the I-693 form until treatment is complete.
TB Testing for Applicants Known to be HIV-Infected

- CXR required regardless of TST/IGRA result or TB sign/symptom status
- If CXR suggestive of TB disease, smears and cultures are required
- If TB smears and cultures negative, designate as
  - Class B1 for TB
  - Class B Other for HIV Infection
- If sputum smears or cultures positive, designate as
  - Class A for TB
  - Class B Other for HIV Infection
Tuberculosis: References

- **2008 Tuberculosis Technical Instructions for Civil Surgeons**

- **Tuberculosis in the United States**
Guidance for HIV for Panel Physicians and Civil Surgeons

http://www.cdc.gov/immigrantrefugeehealth/exams/ti/hiv-guidance-panel-civil.html
How Civil Surgeons Can Contact CDC

- **Email address:** cdcqap@cdc.gov

- CDC answers inquiries about Technical Instructions

- CDC is not able to answer questions about
  - The I-693 form, except specific medical or classification questions
  - Becoming a civil surgeon
Thank You

Email address: cdcqap@cdc.gov

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov  Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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