Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations from CDC, 2006.

Text-Only Version

**Slide 1 (Title Slide): Prevention and Control of Tuberculosis in Correctional and Detention Facilities:**
Recommendations from CDC 2006
Centers for Disease Control and Prevention (CDC), Division of Tuberculosis Elimination
[IMAGE: Correctional facility staff person speaking with inmate.]
[IMAGE: Inmate’s hands resting on cell bars.]
[IMAGE: TB drugs in patient’s hand.]

**Slide 2: Contents (1)**
Summary of Changes from 1996 Recommendations from CDC

Background

Screening

Case Reporting

Airborne Infection Isolation

Environmental Controls

Respiratory Protection

**Slide 3: Contents (2)**
Diagnosis and Treatment of Latent Tuberculosis Infection (LTBI) and Tuberculosis (TB) Disease

Discharge Planning

Contact Investigation

TB Training and Education of Correctional Workers and Inmates

Program Evaluation

Collaboration and Responsibilities

References and Additional Resources

**Slide 4: (Title Slide):** Summary of Changes Made to the 1996 CDC Recommendations for Prevention and Control of TB in Correctional Facilities
[IMAGE: Inmate’s hands resting on cell bars.]
Slide 5: Summary of Changes (1)

Target audience has been broadened to include persons working in jails and other detention facilities

Recommendation that screening procedures for inmates and detainees be based on facility assessment for risk of TB is added

TB symptom review of all inmates and detainees at entry is emphasized

Slide 6: Summary of Changes (2)

Placement of all inmates and detainees with suspected TB in airborne infection isolation (AII) immediately is emphasized

Interferon Gamma Release Assays (IGRAs) have been added to testing recommendations

Recommendations for ventilation have been added

Slide 7: Summary of Changes (3)

Recommendations for respiratory protection have been added

Treatment recommendations for TB disease and LTBI have been updated

Case management of inmates with TB disease and LTBI have been emphasized

Early discharge planning that is coordinated with local public health staff is emphasized

Slide 8: Summary of Changes (4)

Recommendations for US Immigration and Customs Enforcement detainees have been included

Collaboration between the correctional facility and public health staff is emphasized

Recommendations for comprehensive training programs to achieve and sustain TB control that are tailored by corrections and public health staff are added

Slide 9: Summary of Changes (5)

Recommendation for public health workers to be educated about the correctional environment is added

Program evaluation is emphasized

Slide 10: (Title Slide) Background

[IMAGE: Inmate’s hands resting on cell bars.]


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Prison | 319,598 | 487,593 | 743,382 | 1,078,542 | 1,446,269 | 1,492,973 | 1,517,867 | 1,518,559

[IMAGE: Bar graph showing the incarcerated population in the United States from 1980-2008. From 1980-2008, the total number of people in the United State incarcerated in either a jail or a prison has been steadily increasing, from approximately 500,000 in 1980 to approximately 2.3 million in 2008. Source: U.S. Department of Justice, Bureau of Justice Statistics.]

**Slide 12: US Correctional TB Cases by Type of Correctional Facility**

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[IMAGE: Bar graph showing the number of US correctional TB cases by type of correctional facility from 1993-2008.]

**Slide 13: Disproportionately High Percentages of TB Cases Occurring in Incarcerated Persons in the US, 2003**

0.7% of the total US population were confined in prisons and jails

3.2% of all TB cases nationwide occurred among residents of correctional facilities

**Slide 14: TB Case Rates**

TB case rates by location and date.

United States, 1993-2006: <10 cases per 100,000 persons (general population)

New Jersey, 1994

91.2 cases per 100,000 inmates

11.0 cases per 100,000 persons among all New Jersey residents

California, 1991: 184 cases per 100,000 inmates of a California prison (10 times greater than the statewide rate)

California, 1998: 72.1 cases per 100,000 inmates in an urban jail in a high-prevalence area (10% of the county’s cases that year)

New York, 1993: 139.3 cases per 100,000 inmates, an increased rate from 15.4 during 1976–78
Slide 15: Factors Contributing to High Rate of TB in Correctional and Detention Facilities

Disparate numbers of incarcerated persons are at high risk for TB

Physical structure of facilities (e.g., close living quarters, overcrowding, inadequate ventilation)

Movement of inmates into and out of overcrowded and inadequately ventilated facilities

Slide 16: Challenges with Detained Immigrants

Most come from countries with high prevalence of TB (e.g., Mexico, the Philippines, Vietnam)

Social, legal, and language barriers often make testing and treatment interventions inadequate

Some are infected with M. tuberculosis organisms resistant to first-line anti-TB drugs because of interrupted treatment received in their countries of origin

Slide 17: Rationale for Updating and Strengthening TB Control and Prevention Guidelines (1)

Transmission of M. tuberculosis continues to be documented within correctional facilities

Inmates with undiagnosed TB disease place other inmates and correctional staff at risk for TB; when released they can infect members of the community

Immediate isolation of infectious patients can interrupt transmission of M. tuberculosis

Slide 18: Rationale for Updating and Strengthening TB Control and Prevention Guidelines (2)

Prompt initiation of an adequate regimen of directly observed therapy (DOT) helps ensure adherence to treatment

Inmates have relatively high rates of human immunodeficiency virus (HIV) and if coinfected with M. tuberculosis, are at high risk for progressing from LTBI to TB disease

Treatment for LTBI can prevent the development of TB disease

Slide 19: Rationale for Updating and Strengthening TB Control and Prevention Guidelines (3)

Inmates who have TB disease or LTBI can be treated before they are released into the community

The correctional setting can be a primary source of health information, intervention, and maintenance

Slide 20: (Title Slide) Screening

[IMAGE: Inmate’s hands resting on cell bars.]

Slide 21: Screening (1)

Early identification and successful treatment of persons with TB disease is the most effective means of preventing disease transmission
Inmates who are likely to have infectious TB should be identified and started on treatment before they are integrated with other inmates

**Slide 22: Screening (2)**

Screening programs can also detect persons with LTBI who are at high risk for progressing to TB disease

**Slide 23: Factors for Determining Screening Activities**

Type of facility

Prevalence of TB infection and disease in the facility

Prevalence of TB in the inmates’ communities

Prevalence of other risk factors for TB (e.g., HIV)

Average length of stay of inmates in the facility

**Slide 24: Determining the Types of Screening**

Determined by an assessment of the risk for TB transmission within the facility (minimal or nonminimal)

Risk assessments for facilities should be

Performed at least annually

Done in collaboration with the local or state health department

**Slide 25: Definition of a Facility’s TB Risk**

**Minimal TB Risk Facility**

No cases of infectious TB within the last year

Few inmates with risk factors for TB

Few new immigrants

Employees of the facility are not otherwise at risk for TB

**Nonminimal TB Risk Facility**

Any facility that does not meet the criteria for Minimal TB Risk should be categorized as a Nonminimal TB Risk Facility

**Slide 26: Screening Methods: Symptom Screening (1)**

Initial screening should be performed by

Health-care professionals whenever possible

Or
Adequately trained correctional officers
Symptom screening alone is an unsatisfactory screening mechanism for TB except for Minimal TB Risk Facilities

[IMAGE: Health-care professional conducting an initial screening of an inmate.]

**Slide 27: Screening Methods: Symptom Screening (2)**

At intake, all incoming inmates should be screened for symptoms of pulmonary TB

During medical screening, inmates should be asked if they have

A history of TB

Ever been treated for LTBI or TB disease

**Symptoms of TB**

**Slide 28: Screening Methods: Symptom Screening (3)**

Suspicion of TB is high when pulmonary symptoms are accompanied by general systemic symptoms of TB.

**Pulmonary Symptoms**

- Prolonged cough ≥ 3 weeks
- Hemoptysis (bloody sputum)
- Chest pain

**Systemic Symptoms of TB**

- Fever
- Chills
- Night sweats
- Easy fatigability
- Loss of appetite
- Weight loss

**Slide 29: Screening Methods: Symptom Screening (4)**

All inmates who have symptoms suggestive of TB disease should immediately be placed in an AII room and receive a thorough medical evaluation including

- TST or IGRA
- Chest radiograph
Sputum examinations (if indicated)

**Slide 30: Screening Methods: Symptom Screening (5)**

If an inmate has symptoms suggestive of TB disease and/or a history of inadequate treatment for TB disease, they should be placed immediately in an AII room until they have undergone a thorough medical evaluation.

If the patient is found to be noninfectious, then they may be released from AII if TB diagnosis is excluded OR after the patient improves on multidrug anti-TB treatment if suspicion for TB diagnosis remains.

If the patient is found to be infectious, they should remain in isolation until treatment has rendered patient noninfectious (see Discontinuation of Airborne Precautions.)

[IMAGE: Flowchart describing symptom screening.]

**Slide 31: Screening Methods: Chest Radiograph Screening (1)**

Can be an effective means of detecting new cases of unsuspected TB disease at intake

Requires fewer subsequent visits than a TST

Will not identify inmates with LTBI

Might be appropriate for facilities that

House substantial numbers of inmates for short periods

Serve populations at high risk for TB

[IMAGE: Chest radiograph.]

**Slide 32: Screening Methods: Chest Radiograph Screening (2)**

Factors that determine the extent to which chest radiographs are used for TB screening in a facility include

Local epidemiologic characteristics of TB disease

Inmate length of stay

Ability of staff to conduct careful histories, TST or IGRA testing, and cross-matches with state TB registries

Promptness of radiographic study and its reading (should be read within 24 hours)

**Slide 33: Screening Methods: Chest Radiograph Screening (3)**

In facilities that do not perform screening radiographs at admission, chest radiograph should be part of initial screening for

All HIV-infected patients

Those at risk for HIV infection, but whose status is unknown
Slide 34: Screening Methods: Chest Radiograph Screening (4) Facilities with On-site Radiographic Screening

Chest radiograph should be performed as part of intake screening.

The radiograph should be read by a physician within 24 hours.

Persons who have radiographs suggestive of TB should be isolated immediately and evaluated further. They should also receive a sputum smear and culture examination (might also be indicated for certain persons regardless of TST, IGRA, or chest radiograph results).

[IMAGE: Flowchart describing radiographic screening.]

Slide 35: Screening Methods: Mantoux Tuberculin Skin Test (TST) (1)

Most common method of testing for TB infection

Is not completely sensitive for TB disease

With symptom screening, may be the most practical approach to screening for TB disease in many facilities

[IMAGE: Health care worker administering the Mantoux tuberculin skin test on a patient’s forearm.]

Slide 36: Screening Methods: Mantoux Tuberculin Skin Test (TST) (2) Persons Exempt from a TST

Persons who have any of the following:

- Documented history of a positive TST result
- Documented history of TB disease
- Reported history of a severe necrotic reaction to tuberculin

Slide 37: Screening Methods: Mantoux Tuberculin Skin Test (TST) (3) Mantoux TST Screening

- Intradermal injection of 0.1 mL of 5 tuberculin units (TU) of purified protein derivative (PPD)
- Multiple puncture tests (e.g., tine test) are not recommended
- A trained health-care professional should

Place the TST

Interpret the reaction 48 – 72 hours after the injection

Slide 38: Screening Methods: Mantoux Tuberculin Skin Test (TST) (4) Considered a Positive TST Result in Inmates and Correctional Facility Employees

- \( \geq 10 \) mm induration is considered positive for the majority of inmates and correctional facility employees

- \( \geq 5 \) mm induration is considered positive for
HIV infected persons
Recent contact of patients with TB disease
Fibrotic changes on chest radiograph consistent with previous TB disease
Organ transplant recipient or other immunocompromising condition
Suspected of having TB disease

**Slide 39: Screening Methods: Mantoux Tuberculin Skin Test (TST) (5) Persons with Positive TST Results**

Persons with a positive TST and no symptoms of TB disease should have a chest radiograph within 72 hours.

Persons with a positive TST and symptoms of TB disease should be evaluated immediately and placed in an AI room until TB is ruled out.

[IMAGE: Flowchart describing screening methods for persons with positive TST results.]

**Slide 40: Two-Step Testing**

Can reduce the number of positive TST results that would be misclassified as TST conversions due to booster effect

Should be considered for the baseline testing of persons who report no history of a recent TST and who will receive repeated TSTs as part of an institutional periodic skin-testing program

Is often not practical in jails because of the short average length of stay of inmates

**Slide 41: Booster Reaction**

Some people with LTBI may have negative skin test reaction when tested years after infection

Initial skin test may stimulate (boost) ability to react to tuberculin

Positive reactions to subsequent tests may be misinterpreted as a new infection

**Slide 42: Anergy Testing**

No longer recommended routinely for screening programs for M. tuberculosis infection in the United States

Has not been demonstrated to assist in diagnosing or excluding LTBI

**Slide 43: Bacille Calmette-Guerin (BCG)**

Used worldwide as a vaccine against TB

Cannot distinguish between TST reactions caused by BCG and those caused by natural mycobacterial infection, but ≥ 20-mm induration is usually NOT caused by BCG

TST is not contraindicated for persons vaccinated with BCG
The same criteria for interpretation of TST results are used for both BCG vaccinated and nonvaccinated persons.

**Slide 44: Screening Methods: Interferon Gamma Release Assays (IGRAs) (1)**

Diagnostic tool for M. tuberculosis infection, including both TB disease and LTBI

Should be used with risk assessment, radiography, and other diagnostic evaluations.

**Slide 45: Screening Methods: IGRAs (2)**

As with TST, cannot distinguish between LTBI and TB disease.

Available data indicate that IGRAs are as sensitive as TST for detecting TB disease and more specific than TST for detecting LTBI.

IGRAs can be used in all situations that currently use the TST.

**Slide 46: Screening Methods: IGRAs (3) Types of IGRAs**

- **QuantiFERON®-TB Gold test (QFT-G)**
- **QuantiFERON®-TB Gold-In-Tube test (QFT-GIT)**
- **T-Spot TB test**

[TOP IMAGE: QuantiFERON®-TB Gold test (QFT-G) testing materials.]
[BOTTOM IMAGE: T-Spot TB test testing materials.]

**Slide 47: Screening Methods: IGRAs (4) Advantages of IGRAs**

Results can be obtained after a single patient visit (possible cost-benefit).

Variability associated with skin-test reading can be reduced because “reading” is performed in a qualified lab.

IGRA tests are not affected by previous BCG vaccination (eliminates unnecessary treatment for false-positives).

IGRA tests do not affect the result of future IGRA tests (no boosting occurs).

**Slide 48: Screening Methods IGRAs (5) Limitations of IGRAs**

Phlebotomy is needed.

Blood specimens need to be processed within 12 – 16 hours of collection.

Limited number of laboratories can process the test.

Many health care workers lack clinical experience in interpreting test results.

**Slide 49: Use of Local Health Department TB Registry to Assist with Screening Inmates (1)**
Correctional facilities and local health departments should collaborate to ensure effective TB screening in the correctional setting.

During screening, inmates may provide inaccurate information due to forgetfulness, confusion, or deliberate misrepresentation.

**Slide 50: Use of Local Health Department TB Registry to Assist with Screening Inmates (2)**

Correctional facilities and health departments should perform cross-matches using the local TB registry and search for aliases, birth dates, maiden names, and other personal information for TB suspects.

Readily accessible records of previous TB history, drug susceptibility, treatment, and compliance are useful when dealing with patients with suspected TB.

**Slide 51: Initial Screening: Inmates in Minimal TB Risk Facilities**

All inmates are evaluated upon entry for symptoms of TB.

If inmate has no TB symptoms but has risk factors for TB, provide additional screening within 7 days of arrival.

If inmate has TB symptoms, evaluate immediately to rule out infectious TB disease and keep in an AII room until they are evaluated (or transported to a facility that has an AII room).

If noninfectious, they may be released from AII room if TB diagnosis is excluded or after patient is improving on multidrug anti-TB treatment if suspicion for TB diagnosis remains.

If infectious, the inmate should remain in isolation until treatment has rendered them noninfectious.

[IMAGE: Flowchart describing initial screening in a minimal TB risk facility.]

**Slide 52: Initial Screening: Inmates in Nonminimal TB Risk Prisons**

All inmates are evaluated upon entry for symptoms of TB and for clinical conditions and risk factors for infection and disease.

If inmate has no TB symptoms, they will require further screening within 7 days of arrival.

If inmate has TB symptoms they must be evaluated immediately to rule out infectious TB disease and kept in an AII room until they are evaluated (or transported to a facility that has an AII room).

If noninfectious, they may be released from AII if TB diagnosis excluded or after patient is improving on multidrug anti-TB treatment if suspicion for TB diagnosis remains.

If infectious, they should remain in isolation until treatment has rendered them noninfectious.

[IMAGE: Flowchart describing initial screening in a nonminimal TB risk prisons.]

**Slide 53: Initial Screening: Inmates in Nonminimal TB Risk Jails and Other Short-Term Detention Facilities (1)**

All inmates are evaluated upon entry for symptoms of TB.

If inmate has no TB symptoms they will require further screening within 7 days of arrival.
If inmate has TB symptoms they must be evaluated immediately to rule out infectious TB disease and kept in an AII room until they are evaluated (or transported to a facility that has an AII room).

If noninfectious, they may be released from AII if TB diagnosis excluded or after patient is improving on multidrug anti-TB treatment if suspicion for TB diagnosis remains.

If infectious, they should remain in isolation until treatment has rendered them noninfectious.

[IMAGE: Flowchart describing initial screening in a nonminimal TB risk jails and other short-term detention facilities.]

**Slide 54: Inmates in Nonminimal TB Risk Jails and Other Short-Term Detention Facilities (2)**

Primary purpose of screening in correctional settings is to detect TB disease

TST or IGRA screening is often not practical for the purpose of initiating LTBI therapy because of the high rate of turnover and short lengths of stay

**Slide 55: Inmates in Nonminimal TB Risk Jails and Other Short-Term Detention Facilities (3)**

Treating LTBI in the jail setting is most effective if resources dedicated to discharge planning and reliable access to community-based treatment are available

Some interventions (e.g., education and incentives) can lead to

Improvements in linking released detainees to post-release medical care

An increase in the likelihood that LTBI treatment will be completed

**Slide 56: Screening Persons in Holding or Booking Facilities**

Provide TB symptom screening at the time of entry for all persons. For those with TB symptoms: immediately isolate and transfer to a facility or hospital that has an AII room and evaluate for TB disease.

**Slide 57: Screening New Employees in All Correctional and Detention Facilities**

Evaluate all new employees at time of hiring with medical history related to TB and a physical examination for TB disease.

Employees with no documented history of a positive TST or IGRA result should receive a TST or IGRA (those not tested during the preceding 12 months should receive two step TST or single step IGRA).

If an employee has a positive TST or IGRA result, they should have a chest radiograph and a medical evaluation.

If an employee has a positive test result but does not have TB disease, LTBI treatment should be considered.

If an employee has TB disease, they should be told NOT to work until no longer infectious.

[IMAGE: Flowchart describing screening new employees in all correctional and detention facilities.]

**Slide 58: Other Persons Who Need to Be Screened**
People who are neither inmates nor employees but who visit high-risk facilities on a regular basis should be considered for screening (e.g., food handlers, service workers, volunteers, and those providing religious ministries)

Screening should follow the same procedures as for employees

**Slide 59: Periodic Screening of Inmates and Employees**

Long-term inmates and all employees who have a negative baseline TST or IGRA result should have follow-up testing at least annually

Persons who have a history of a positive test result should be screened for symptoms of TB disease at least annually

Annual chest radiographs are unnecessary for the follow-up evaluation of infected persons

**Slide 60: HIV Counseling, Testing, and Referral**

Provide routine HIV counseling, testing, and referral to inmates and correctional facility staff with LTBI or TB disease if their HIV infection status is unknown at the time of their TB diagnosis

**Slide 61: Use of Data to Refine Policies and Procedures**

Collect and analyze data on the effectiveness of the facility screening policies and procedures

Refine policies and procedures based on the data

**Slide 62: (Title Slide) Case Reporting**

[IMAGE: Inmate’s hands resting on cell bars.]

**Slide 63: Requirements for Case Reporting**

All states require reporting of suspected and confirmed cases of TB to their local or state health department

Correctional facility medical staff should report any suspected or confirmed TB cases among inmates or employees to the health agency designated by state and local laws and regulations

**Slide 64: Reporting Drug Susceptibility Results**

Report drug susceptibility results to

The state or local health department for use in monitoring rates of drug resistance

All health departments managing the infectious person’s contacts to help determine the LTBI treatment regimen

**Slide 65: (Title Slide) Isolation in an Airborne Infection Isolation (AII) Room**

[IMAGE: Inmate’s hands resting on cell bars.]

**Slide 66: Initiation of TB Airborne Precautions**

Initiate for any patient with the following:
Signs or symptoms of TB disease
Or

Documented TB disease and has NOT completed treatment or has NOT been determined previously to be noninfectious

**Slide 67: Remaining in an AII Room**
All patients with confirmed TB disease should remain in an AII room while incarcerated until they have had ALL of the following:

- 3 consecutive negative AFB sputum-smear results collected 8–24 hours apart, with at least 1 being an early morning specimen
- Standard multidrug anti-TB treatment
- Demonstrated clinical improvement

**Slide 68: Discontinuation of Airborne Precautions for Suspected TB**
Infectious TB is considered unlikely AND another diagnosis is made that explains the clinical syndrome
Or

- The patient has 3 negative acid-fast bacilli (AFB) sputum-smear results
  - Should be collected 8–24 hours apart
  - At least one should be an early morning specimen
  - If AFB sputum negative and suspicion for TB remains, should be started on 4 drugs before release from AII room

**Slide 69: (Title Slide) Environmental Controls**
[IMAGE: Inmate’s hands resting on cell bars.]

**Slide 70: Environmental Controls (1)**
Should be implemented when the risk for TB transmission persists despite efforts to screen and treat infected inmates

- Used to remove or inactivate M. tuberculosis in areas in which the organism could be transmitted

**Slide 71: Environmental Controls (2)**
Primary environmental controls

- Control the source of infection with local exhaust ventilation

Secondary environmental controls

- Control airflow to prevent contamination of air adjacent to the source or clean air using a high-efficiency particulate air (HEPA) filter or ultraviolet germicidal irradiation (UVGI)
Slide 72: Airborne Infection Isolation (AII) Rooms

Inmates known or suspected to have TB disease should be placed in an AII room or AII cell

Inmates deemed infectious should remain in isolation until treatment or further evaluation has ensured they are noninfectious

Facilities without an on-site AII room should have a written plan for referring patients with suspected or confirmed TB to a facility that can isolate, evaluate, and treat TB patients

Slide 73: Environmental Control Maintenance

To be most effective, environmental controls should be installed, operated, and maintained correctly

TB infection-control plans should include ongoing maintenance and identify

Responsibility and authority for maintenance

Staff training needs

Routine preventive maintenance should be scheduled and cover all components of the ventilation systems and air-cleaning devices

Slide 74: (Title Slide) Respiratory Protection

[IMAGE: Inmate’s hands resting on cell bars.]

Slide 75: Considerations for Selection of Respirators

Respiratory protection is used

When administrative and environmental controls alone have not reduced the risk for infection with M. tuberculosis to an acceptable level

For specific settings and situations

Entering AII rooms

Transporting infectious inmates

Participating in cough-inducing procedures

Slide 76: Respirators

Respirators should be selected from those approved by CDC/National Institute for Occupational Safety and Health (NIOSH) – www.cdc.gov/niosh

[IMAGE: Female health care worker wearing an N-95 particulate respirator.]
[IMAGE: Male health care worker wearing an N-95 particulate respirator.]

Slide 77: Implementing a Respiratory Protection Program

All facilities should develop, implement, and maintain a respiratory protection program for health-care workers or other staff who use respiratory protection
Respiratory protection programs are required for facilities covered by the US Occupational Safety and Health Administration (OSHA)

**Slide 78: Key Elements of a Respiratory Protection Program**

- Assignment of responsibility
- Training
- Fit testing

**Slide 79: Precautions for Transporting Patients Between Correctional or Detention Facilities (1):**

Transporting in an ambulance

- Transport patients with suspected or confirmed infectious TB disease in an ambulance whenever possible
- Operate the ventilation system in the noncirculating mode with maximum amount of outdoor air provided
- Use a rear exhaust fan if possible
- Airflow should be from the cab, over the patient, and out the rear exhaust

**Slide 80: Precautions for Transporting Patients Between Correctional or Detention Facilities (2):**

Transporting in a vehicle that is NOT an ambulance

- Ventilation system should bring in as much outdoor air as possible
- Set ventilation system to noncirculating
- Isolate the cab from the rest of the vehicle if possible
- Place patient in the rear seat

**Slide 81: Precautions for Transporting Patients Between Correctional or Detention Facilities (3):**

Transporting in a vehicle that is NOT an ambulance

- Drivers and other persons should wear at least an N95 disposable respirator
- If the patient has signs or symptoms of infectious TB, the patient should wear a surgical or procedure mask during transport, in waiting areas, or when others are present

**Slide 82: (Title Slide) Diagnosis and Treatment of Latent Tuberculosis Infection and Tuberculosis Disease**

[IMAGE: Inmate’s hands resting on cell bars.]

**Slide 83: TB Disease Symptoms**

- Persistent cough (≥ 3 weeks)
- Hemoptysis (coughing up blood)
Night sweats
Weight loss
Anorexia
Fever

Slide 84: Diagnostic Tests for TB Disease and LTBI

TST
IGRA

Chest radiograph

Laboratory examination of sputum samples or other body tissues and fluid

Slide 85: Criteria for Evaluation of Correctional Facility Staff and Inmates with LTBI for TB Disease by Test Result (1)

<table>
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<th>Purpose</th>
<th>TST Result</th>
<th>IGRA Result</th>
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<td>Baseline</td>
<td>≥ 10 mm* (either 1st or 2nd step)</td>
<td>Positive single-step test result</td>
</tr>
<tr>
<td>Serial testing (no known exposure)</td>
<td>Increase of ≥ 10 mm</td>
<td>Change from negative to positive</td>
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</tbody>
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| Known exposure (close contact) | ≥ 5 mm in those with a baseline TST of 0 mm
Increase of ≥ 10 mm in those with baseline or previous follow-up screening TST result of <10 mm | Change from negative to positive                      |

* See footnote on next slide

Slide 86: Criteria for Evaluation of Correctional Facility Staff and Inmates with LTBI for TB Disease by Test Result (2) (Footnote)

* Except for persons in whom 5 mm is considered positive:

Persons infected with HIV

Persons who are recent contacts of patients with TB disease

Persons with fibrotic changes on chest radiograph consistent with previous TB disease

Organ transplant recipients and patients with other immunocompromising conditions (e.g., persons receiving >15 mg/day of prednisone for 1 month)

Persons suspected of having TB disease
Slide 87: Special Considerations in Interpreting the TST
Interpretation may be complicated by

Vaccination with BCG

Anergy

Boosting effect

Slide 88: Correctional Staff and Inmates who Refuse Testing for M. tuberculosis Infection

Educate the person on the importance of routine screening of correctional facility staff and inmates

If the person continues to refuse a TST, offer an IGRA test (and vice versa)

Slide 89: IGRA Test Results and Interpretation

Positive IGRA result

Clinical interpretation: M. tuberculosis infection likely; medical evaluation indicated

Negative IGRA result

Clinical interpretation: M. tuberculosis infection unlikely but cannot be excluded, especially when illness is consistent with TB disease and likelihood of progression to TB disease is increased

Indeterminate IGRA result

Clinical interpretation: Not possible to determine likelihood of M. tuberculosis infection from blood sample supplied

Slide 90: Interpreting Chest Radiographs: Persons with Suspected Pulmonary TB (1)

Multiple types of abnormalities strongly suggest pulmonary TB disease:

Upper-lobe infiltration

Cavitation

Pleural effusion

Infiltrates can be patchy or nodular and observed in the apical or subapical posterior upper lobes or superior segment of the lower lobes

[IMAGE: Doctor reviewing a chest radiograph.]

Slide 91: Interpreting Chest Radiographs: Persons with Suspected Pulmonary TB (2)

Radiographic presentation of pulmonary TB in HIV-infected persons may be atypical

In these persons, apical cavitary disease is less common than in HIV-uninfected patients
More common findings include infiltrates in any lung zone, mediastinal or hilar adenopathy, or in rare cases, a normal chest radiograph.

**Slide 92: Interpreting Chest Radiographs: Persons with LTBI**

Exclude pulmonary TB disease with a chest radiograph for all persons with LTBI.

Persons with LTBI typically have normal chest radiographs.

If chest radiographs do not indicate pulmonary TB and no symptoms consistent with TB disease are present, persons with positive test results for TB infection should be considered for treatment of LTBI.

**Slide 93: Evaluation of Sputum Samples**

Sputum examination is a key diagnostic procedure for pulmonary disease and is indicated for the following inmates and correctional facility staff:

- Persons suspected of having pulmonary TB disease based on chest radiograph or symptoms.
- HIV-infected persons with any pulmonary TB symptoms regardless of chest radiograph findings.
- Persons suspected of having pulmonary TB for which bronchoscopy is planned.

[IMAGE: TB suspect coughing a sputum sample into a sterile container.]

**Slide 94: Specimen Collection (1)**

Collect at least 3 sputum specimens:

- 8–24 hours apart.
- At least 1 specimen in the early morning.
- Preferably in a sputum induction booth or an AII room.
- Outdoors in resource-limited settings.
- Observed by a health-care professional if possible.

**Slide 95: Specimen Collection (2)**

Instruct patients how to produce an adequate sputum specimen.

For patients who are unable to produce an adequate sputum specimen, induce by inhalation of an aerosol of warm hypertonic saline.

**Slide 96: Laboratory Examination**

Detection of AFB in stained smears can provide the first mycobacteriologic indication of TB disease.

Definitive identification of M. tuberculosis can only be made with a culture or nucleic acid amplification (NAA).
Slide 97: Laboratory Examination (1)

Sputum Smear

Time: usually within 1 day

Basis of procedure: look for AFB on slide under microscope

Significance of test: detection of mycobacteria

Significance of a negative report: patient is less likely to be infectious; does NOT exclude TB disease

Culture

Time: usually within 28 days

Basis of procedure: look for colonies of tubercle bacilli or other mycobacteria on culture media in incubator

Significance of test: definitive identification of specific mycobacteria species necessary for confirmation of TB and for drug susceptibility

Significance of a negative report: no live tubercle bacilli found in the specimen; does not rule out TB disease (live tubercle bacilli may be in other specimens and/or in the patient)

Slide 98: Laboratory Examination (2)

Sputum Smear

Significance of a positive report: patient is more likely to be infectious (if AFB are tubercle bacilli); AFB could be nontuberculous mycobacteria

Report positive results: within 24 hours of collection

Culture

Significance of a positive report: confirms diagnosis of TB disease

Report positive results: within 24 hours of notation of a positive culture

Slide 99: Drug-Susceptibility Tests

Perform on initial isolates from all patients with TB disease

Repeat if

Sputum specimens continue to be culture-positive 3 months after initiation of treatment

A patient’s culture that had converted to negative subsequently reverts to positive
Slide 100: Drug-Susceptibility Testing

When results are available, adjust the treatment regimen accordingly.

Medical providers treating patients with drug-resistant TB disease should seek expert consultation and collaborate with the local health department for treatment decisions.

Slide 101: Treatment for LTBI

Reduces the risk that TB infection will progress to TB disease.

Before treatment is started, rule out TB disease by:

- History
- Medical examination
- Chest radiograph
- Mycobacteriologic studies (when needed)

Slide 102: Candidates for Treatment of LTBI (Correctional Facility Staff and Inmates) (1)

High-risk groups with a ≥ 5 mm TST result, regardless of age:

- HIV-infected persons
- Recent contacts of a TB patient
- Persons with fibrotic changes on chest radiograph consistent with previous TB disease
- Patients with organ transplants and other immuno-compromising conditions who receive the equivalent of ≥ 15 mg/day of prednisone for ≥ 1 month

Slide 103: Candidates for Treatment of LTBI (Correctional Facility Staff and Inmates) (2)

All others with a ≥ 10 mm TST result

Positive IGRA result

Slide 104: Common Drug Regimens for Treatment of LTBI (administered by DOT) (1)

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Duration (mos)</th>
<th>Interval</th>
<th>No. of Doses</th>
<th>Rating (Evidence) †</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoniazid</td>
<td>9</td>
<td>Daily</td>
<td>270</td>
<td>HIV - A (II), HIV + A (II)</td>
</tr>
<tr>
<td>Drug</td>
<td>Dosage</td>
<td>Frequency</td>
<td>Rating</td>
<td>Comment</td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
<td>-----------</td>
<td>--------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Isoniazid</td>
<td>6</td>
<td>Daily</td>
<td>B (I)</td>
<td>C (I)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Twice wkly</td>
<td>B (II)</td>
<td></td>
</tr>
<tr>
<td>Rifampin*</td>
<td>4</td>
<td>Daily</td>
<td>B (II)</td>
<td>C (I)</td>
</tr>
</tbody>
</table>

**Slide 105: Common Drug Regimens for Treatment of LTBI (administered by DOT) (2)**

(Footnotes)

* Substitution of rifabutin for rifampin might be indicated in HIV-infected patients taking certain antiretroviral medications because drug-drug interaction might be less frequent when rifabutin is used.

†Ratings are based on modification of the U.S. Public Health Service rating system (American Thoracic Society, CDC. Targeted tuberculin testing and treatment of latent TB infection).

A = Preferred
B = Acceptable alternative
C = Offer when A and B cannot be given

I= Randomized clinical data
II = Data from clinical trials that were not randomized or were conducted in other populations
III = Expert opinions

**Slide 106: Contacts of Patients with Drug-Susceptible TB Disease (1)**

Contacts of patients with drug-susceptible TB disease who once tested negative but subsequently have a positive TST result (i.e., ≥ 5 mm) should be evaluated for treatment of LTBI.

Majority of persons who are infected will have a positive TST result within 6 weeks of exposure.

Retest those who have initial negative TST result 8–10 weeks after exposure.

**Slide 107: DOT for LTBI Patients**

LTBI patients who should receive DOT.

All patients on intermittent treatment.

Use DOT with daily dosing of LTBI treatment whenever feasible.

Patients with highest priority for DOT.

Persons with HIV infection.

Recent contacts of infectious patients with pulmonary TB.
Slide 108: Contacts of Patients with Drug-Susceptible TB Disease (2)

Consider the following high-risk groups for LTBI treatment:

- HIV-infected persons (regardless of TST result or previous LTBI treatment history)
- Persons receiving immunosuppressive therapy (regardless of TST result or previous LTBI treatment history)
- Persons with a known documented (previous to current exposure) positive TST result if they have not been previously treated

Slide 109: Contacts of Patients with Drug-Resistant TB Disease (3)

Treatment for LTBI caused by drug-resistant M. tuberculosis organisms is complex

Should be conducted in consultation with the local health department TB control program and persons with expertise in the medical management of drug-resistant TB

Will require waiting for drug-susceptibility testing results

Slide 110: Treatment for TB Disease

A decision to initiate treatment should be made based on

- Epidemiologic information
- Clinical, pathological, and radiographic findings
- Results of microscopic examination of AFB-stained sputum smears
- Results of cultures for mycobacteria

Slide 111: Initial Drug Regimens for Culture-Positive Pulmonary TB Caused by Drug-Susceptible Organisms (1)

<table>
<thead>
<tr>
<th>Regimen</th>
<th>Drug</th>
<th>Interval</th>
<th>Dose</th>
<th>Minimum Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Isoniazid *</td>
<td>Daily</td>
<td>56</td>
<td>8 weeks</td>
</tr>
<tr>
<td></td>
<td>Rifampin *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pyrazinamide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethambutol †</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Isoniazid *</td>
<td>Daily, then twice weekly §</td>
<td>14 daily, then 12 twice weekly</td>
<td>2 weeks daily, then 6 weeks twice weekly</td>
</tr>
<tr>
<td></td>
<td>Rifampin *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pyrazinamide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethambutol †</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>See sources cited on the next slide for less commonly used regimens</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
* See footnotes on next slide

**Slide 112: Initial Drug Regimens for Culture-Positive Pulmonary TB Caused by Drug-Susceptible Organisms (2) (Footnotes)**


* Substitution of rifabutin for rifampin might be indicated in HIV-infected patients taking certain antiretroviral medications because drug-drug interaction might be less frequent when rifabutin is used
† May be discontinued if the infecting organism is confirmed to be susceptible to isoniazid and rifampin
§ Not recommended for HIV-infected patients with CD4+ T-lymphocyte cell counts of <100 cells/mm3. Additional information is available at http://www.cdc.gov/tb/publications/guidelines/TB_HIV_Drugs/default.htm

**Slide 113: Continuation Phase Options for Initial Drug Regimens 1 and 2 (1)**

| Regimen | Option | Drugs | Interval | Doses | Minimum Duration * | Rating (evidence) †
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a</td>
<td>Isoniazid Rifampin **</td>
<td>Daily</td>
<td>126</td>
<td>18 weeks</td>
<td>A (I) HIV – § A (II) HIV + ¶</td>
</tr>
<tr>
<td>1</td>
<td>b</td>
<td>Isoniazid Rifampin **</td>
<td>Twice weekly † †</td>
<td>36</td>
<td>18 weeks</td>
<td>A (I) HIV – § A (II) HIV + ¶</td>
</tr>
<tr>
<td>2</td>
<td>a</td>
<td>Isoniazid Rifampin **</td>
<td>Twice weekly † †</td>
<td>36</td>
<td>18 weeks</td>
<td>A (II) HIV – § B (I) HIV + ¶</td>
</tr>
</tbody>
</table>

Other Refer to American Thoracic Society, CDC, Infectious Diseases Society of America. Treatment of tuberculosis. MMWR 2003;52 (No. RR-11):1-80 for less commonly used options

* See footnotes on next 2 slides

**Slide 114: Continuation-Phase Options for Initial Drug Regimens 1 and 2 (2)**

(Footnotes)

* Patients with cavitation on initial chest radiograph and positive cultures at completion of 2 months of therapy should receive a 7-month (31 wks; either 217 doses [daily] or 62 doses [twice wkly]) continuation phase
† Ratings are based on modification of the U.S. Public Health Service rating system (American Thoracic Society, CDC, Infectious Diseases Society of America. Treatment of tuberculosis. MMWR 2003; 52 [No. RR-1]:1-80)
A = Preferred
B = Acceptable alternative
C = Offer when A and B cannot be given

I= Randomized clinical data
II = Data from clinical trials that were not randomized or were conducted in other populations
III = Expert opinions

Slide 115: Continuation-Phase Options for Initial Drug Regimens 1 and 2 (2)
(Footnotes cont.)
§ Human immunodeficiency virus (HIV)-negative
¶ HIV-infected
** Substitution of rifabutin for rifampin might be indicated in HIV-infected patients taking certain antiretroviral medications because drug-drug interaction might be less frequent when rifabutin is used
†† Not recommended for HIV-infected patients with CD4+ T-lymphocyte cell counts <100 cells/mm3.
Additional information is available at http://www.cdc.gov/tb/publications/guidelines/TB_HIV_Drugs/default.htm

Slide 116: Adherence to Treatment
The primary determinant of treatment outcome is patient adherence to the drug regimen
Measures should be designed to enable and foster adherence
DOT should be used throughout the entire course of therapy whenever feasible
DOT should be coordinated with the local health department on an inmate’s release
Local health department also may be involved in monitoring therapy for correctional facility staff

Slide 117: (Title Slide) Discharge Planning
[IMAGE: Inmate’s hands resting on cell bars.]

Slide 118: Discharge Planning
Correctional facilities’ discharge planning process should include
Collaborating with public health and other community health-care professionals
Ensuring continuity of case management
Evaluating discharge-planning procedures and modifying procedures as needed to improve outcomes

Slide 119: Collaboration Between Correction Facilities and Public Health Officials for Discharge Planning (1)
Collaboration should address the following:

Short length of stay in a facility
Unscheduled release or transfer
Poorly defined or implemented channels of communication between correctional and public health authorities

Limited resources (i.e., staff, equipment, and medications) available to provide recommended TB prevention, screening, treatment, and discharge planning services

**Slide 120: Collaboration Between Correction Facilities and Public Health Officials for Discharge Planning (2)**

Collaboration should address the following:

- Limited resources of the patient to make or keep appointments
- High prevalence of mental illness and substance abuse among correctional patients
- Mistrust among inmates, which might result in the provision of aliases or incorrect contact or locating information
- Reincarceration, with disruption in treatment or termination of public health benefits

**Slide 121: Comprehensive Discharge Planning**

Implement for inmates with confirmed TB disease, suspected TB disease, and LTBI who are at high risk for progression to TB disease

All inmates who have begun therapy for LTBI in a correctional facility should be given community contact information for follow-up and continuity of care

Discharge planning should begin in the detention phase and continue in the post detention phase to ensure continuity of care

**Slide 122: Components of Discharge Planning (1)**

- Initiate discharge planning early
- Provide case management
- Obtain detailed contact information
- Assess and plan for substance abuse and mental health treatment and other social services

**Slide 123: Components of Discharge Planning (2)**

- Make arrangements for post-release follow-up
- Make provisions for unplanned release and unplanned transfers
- Provide education and counseling

**Slide 124: DOT for TB Disease or LTBI in the Correctional Setting**

Provides an opportunity for educating and counseling inmates
Establishes a routine of medication administration (this may enhance adherence after release)

**Slide 125: Community-Based Case Management After Release (1)**

Case-management strategies begun in the correctional facility should be continued after release for former inmates with

Confirmed or suspected TB disease

LTBI who are at high risk for progression to TB

**Slide 126: Community-Based Case Management after Release (2)**

Incentives combined with education and counseling optimize both short-and long-term adherence

Case management results in improved LTBI treatment completion rates if cultural differences and patient-defined needs are addressed

**Slide 127: Discharge Planning for Immigration and Customs Enforcement Detainees (1)**

Persons with TB disease detained by Immigration and Customs Enforcement (ICE) officers are a potential public health threat because they are

Typically highly mobile

Likely to leave and reenter the United States before completion of TB therapy

At high risk for interrupting treatment

**Slide 128: Discharge Planning for Immigration and Customs Enforcement Detainees (2)**

Ensuring treatment of such detainees is important to the national strategy to eliminate TB in the United States

Correctional facility staff should identify patients who are ICE detainees when reporting TB cases to local and state health departments

**Slide 129: (Title Slide) Contact Investigation**

[IMAGE: Inmate’s hands resting on cell bars.]

**Slide 130: Overview of TB Contact Investigation (1)**

Overall goal is to interrupt transmission of *M. tuberculosis*

Ongoing transmission is prevented by

Identifying, isolating, and treating persons with TB disease

Identifying infected contacts of the source patient and secondary patients and providing them with a complete course of treatment for LTBI

**Slide 131: Overview of TB Contact Investigation (2)**
The contact investigation can serve to

Educate corrections staff and inmates about the risk, treatment, and prevention of TB in correctional facilities

Inform staff and inmates regarding the importance of engaging in recommended TB-control practices and procedures within the correctional system

Emphasize the importance of completion of therapy for persons with TB disease and LTBI

**Slide 132: Overview of TB Contact Investigation (3)**

Requires a multidisciplinary team

Health departments can help in planning, implementing, and evaluating a TB contact investigation

Data collection and management is an essential component and requires a systematic approach to collecting, organizing, and analyzing TB-associated data

**Slide 133: Overview of TB Contact Investigation (4)**

Two correctional information systems critical to the efficient conduct of a contact investigation:

An inmate medical record system containing TST results and other relevant information

An inmate tracking system

**Slide 134: TB Transmission Factors (1)**

Source patient has high likelihood of transmission if:

AFB smear-positive

Cavitary disease

Delayed diagnosis

Contacts have high likelihood of transmission if:

Age

Infants and children < 4 years of age

Immunosuppression

HIV infected

Other forms of immune suppression

Other medical conditions

**Slide 135: TB Transmission Factors (2)**

Exposure. High likelihood of transmission if
Air volume
Low air volume
Confined space
Ventilation
Confined air with little or no ventilation
Recirculated air without HEPA filtration
Duration of exposure
Longer and frequent exposure

Slide 136: Decision to Initiate a Contact Investigation (1)

Make decisions to conduct contact investigations on a case-by-case basis
Conduct contact investigations in conjunction with the public health department

Slide 137: Decision to Initiate a Contact Investigation (2)

Conduct contact investigations in the following circumstances:
Suspected or confirmed pulmonary, laryngeal, or pleural TB with cavitary disease on chest radiograph or positive AFB smears (sputum or other respiratory specimens)
Suspected or confirmed pulmonary (noncavitary) or pleural TB with negative AFB smears (sputum or other respiratory specimens) and a decision has been made to initiate TB treatment

Slide 138: Principles for Conducting the Contact Investigation (1)

Stratify identified contacts by their duration and intensity of exposure to the source patient
Classify HIV-infected and other immunosuppressed contacts as the highest priority group for screening and initiation of LTBI therapy, regardless of duration and intensity of exposure

Slide 139: Principles for Conducting the Contact Investigation (2)

Immediately screen groups of contacts identified with the greatest degree of exposure, follow with repeat testing at 8–10 weeks if the initial TST or IGRA is negative
Calculate the infection rate to assess the level of TB transmission

Slide 140: Principles for Conducting the Contact Investigation (3)

Make decisions to expand the contact investigation to groups with less exposure on the basis of the calculated infection rate
If no evidence of transmission is observed, do NOT expand the investigation
If transmission is occurring, expand the investigation incrementally to groups with less exposure

Include corrections and medical staff in the contact investigation, depending on their exposure risks

**Slide 141: Contact Investigation Stepwise Procedures (1)**

- Notify correctional management officials
- Conduct a source patient chart review
- Interview the source patient
- Define the infectious period
- Convene the contact investigation team
- Update correctional management official
- Obtain source case inmate traffic history
- Tour exposure sites

**Slide 142: Contact Investigation Stepwise Procedures (2)**

- Prioritize contacts
- Develop contact lists
- Conduct a medical record review on each high-priority contact
- Evaluate HIV-infected contacts for TB disease and LTBI promptly
- Place and read initial TST or perform IGRA on eligible contacts
- Make referrals for contact evaluation

**Slide 143: Contact Investigation Stepwise Procedures (3)**

- Calculate the infection rate and determine the need to expand the investigation
- Place and read follow-up TST or perform follow-up IGRA
- Determine the infection/transmission rate
- Write a summary report

**Slide 144: Medical Evaluation of Contacts**

Appropriate medical evaluation depends on both the immunologic status of the contact and previous TST or IGRA result
Adequate knowledge of these data is possible only through use of a medical record system that is complete, up-to-date, and reliable with regard to TST or IGRA status, testing date, and documentation of the reading in millimeters (for TST)

Without an adequate medical record system, the true infection and transmission rates cannot be determined

**Slide 145: Medical Evaluation of All Contacts**

All contacts: Interview for symptoms of TB disease using a standard symptom questionnaire

If contact has no TB symptoms but has risk factors, provide additional screening within 7 days of arrival.

If HIV status is unknown, consider HIV testing

If contact has TB symptoms, they should receive a chest radiograph and a complete medical evaluation by a physician, regardless of TST or IGRA status.

Inmates should be isolated in an AII room if infectious TB is suspected by chest radiograph or clinical findings.

Symptomatic staff should not be permitted to work.

[IMAGE: Flowchart describing medical evaluation of all contacts.]

**Slide 146: Medical Evaluation of Contacts: Inmates with Documented Previous Positive TST or IGRA Result**

All inmates with documented previous positive TST or IGRA result: interview for symptoms of TB disease using a standard symptom questionnaire

If inmate has no TB symptoms: Need no further follow-up, other than consider for routine treatment of LTBI (if not completed in the past)

If inmate has TB symptoms: Receive further evaluation (e.g., chest radiograph for persons with respiratory symptoms)

[IMAGE: Flowchart describing medical evaluation of contacts with documented previous positive TST or IGRA result.]

**Slide 147: Medical Evaluation of Contacts: HIV-Infected Inmates (1)**

HIV-infected contacts should

Be interviewed for symptoms

Have a TST or IGRA

Have a chest radiograph

Complete a course of treatment for LTBI (once TB disease has been ruled out) regardless of the TST or IGRA result
Slide 148: Medical Evaluation of Contacts: HIV-Infected Inmates (2)

Treatment should be initiated even for persons with a history of previous treatment of LTBI or TB disease because of the possibility of re-infection.

Those with a history of a negative TST or IGRA result should have a TST or IGRA done at baseline and again in 8–10 weeks.

Slide 149: Medical Evaluation of Contacts: HIV-Negative Inmates with Previous Negative TST or IGRA

Conduct mandatory TST or IGRA testing of all previously negative (HIV and TST or IGRA) inmate contacts at baseline (unless previously tested within 1–3 months of exposure).

Repeat testing 8–10 weeks from the most recent contact with the source patient.

Slide 150: Medical Evaluation of Contacts: TST and IGRA Converters

Offer treatment for LTBI (unless medically contraindicated) to:

Persons whose TST or IGRA result converts to positive

Or

Persons with newly documented positive TST or IGRA results.

Inmate contacts who refuse medically indicated treatment for LTBI should be monitored regularly for symptoms.

Slide 151: (Title Slide) Tuberculosis Training and Education of Correctional Workers and Inmates

[IMAGE: Inmate’s hands resting on cell bars.]

Slide 152: TB Training and Education of Correctional Workers and Inmates

Correctional facilities and local or state health departments should collaborate when providing TB training and education.

Routine TB education should be provided for all persons who spend significant time in the facility; additional training should be given to any employee who will interact with persons at risk for TB.

TB training and education efforts and other TB-related events should be documented to ensure these programs can be evaluated and updated.

Slide 153: Training and Education in Correctional Facilities

In-facility, preservice training or orientation should include training and education on M. tuberculosis for people who spend significant time in correctional facilities, and can include:

Correctional workers

Volunteers

Inmates
Other persons

TB training should be provided at least annually thereafter

**Slide 154: Initial Training and Education for All Correctional Workers (1)**

For all correctional workers* include

- M. tuberculosis transmission signs, symptoms, diagnosis (difference between LTBI and TB disease), and prevention
- Importance of following up on inmates or correctional workers demonstrating signs or symptoms of TB disease
- Initiation of AII precautions for inmates with suspected or confirmed TB disease

*Level and detail will vary according to job responsibilities

**Slide 155: Initial Training and Education for All Correctional Workers (2)**

For all correctional workers* include

- Policies and indications for discontinuing AII precautions
- Basic principles of LTBI and TB disease treatment
- TB disease in immunocompromised persons

*Level and detail will vary according to job responsibilities

**Slide 156: Required Training for Correctional Workers in Facilities with AII Rooms**

For all correctional workers in facilities equipped with AII rooms include

- Use of administrative and engineering controls and personal protective equipment
- Respiratory protection program

**Slide 157: Enhanced Training and Education for Correctional Workers in High-Risk Facilities (1)**

- Signs and symptoms of TB disease
- Transmission of TB disease
- TB infection-control policies (including instruction on and location of the facility’s written infection-control policies and procedures, exposure control plan, and respiratory protection plan)

**Slide 158: Enhanced Training and Education for Correctional Workers in High-Risk Facilities (2)**

If a contact investigation is conducted because of suspected or confirmed infectious TB include

- Contact investigation guidelines
- Method used to determine a contact’s risk for infection and prioritization for evaluation and treatment
Noninfectiousness of persons with TB disease who have responded to therapy and have submitted 3 AFB-negative sputum smear results

Patient confidentiality issues

**Slide 159: Training and Education of Public Health Department Staff (1)**
Should include (but not limited to) the following topics:

- TB-related roles of correctional facility and health department staff
- Methods of effectively collaborating with correctional facilities
- Differences between and among jails, prisons, and other forms of detention facilities

**Slide 160: Training and Education of Public Health Department Staff (2)**
Should include (but not limited to) the following topics:

- Correctional culture and the importance of respecting the mission and purpose (i.e., custody) of correctional facilities and correctional workers
- The health department’s role in case management, contact investigation, and the discharge of inmates
- The effect of the custody and movement of foreign detainees on local facilities

**Slide 161: Training and Education of Inmates**
Using appropriate terms for education level and language include

- General TB information (provided at the time of admission or when being screened for TB)
- The meaning of a positive TST or IGRA result and treatment options for LTBI
- Comprehensive TB education, including infectiousness and treatment for inmates being confined with suspected or confirmed TB disease
- The importance of completing treatment for inmates with LTBI or TB disease

**Slide 162: (Title Slide) Program Evaluation**
[IMAGE: Inmate’s hands resting on cell bars.]

Slide 163: Six Steps for Monitoring and Evaluation of a TB Prevention and Control Program

- Identifying collaborators
- Describing the TB-control program
- Focusing the evaluation to assess facility TB risk and performance
- Collecting and organizing data
- Analyzing data and forming conclusions
Using the information to improve the TB program

**Slide 164: Identifying Collaborators**

TB control requires collaboration of

Correctional system

Health departments

Other community agencies

Early engagement of collaborators

Ensures that evaluation will yield most useful information for stakeholders

Promotes mutual cooperation for constructive change

Each program should have a designated person responsible for data quality and program evaluation

**Slide 165: Describing the Program**

Evaluators should be knowledgeable about

Program goals and objectives

Strategies

Expected program-associated results

How the program fits into the larger organization and community

All stakeholders should agree on program goals before the evaluation is undertaken

**Slide 166: Focusing the Evaluation to Assess Risk and Performance Risk Assessment (1)**

Each facility should annually assess its level of TB risk and include the following indicators:

Burden of disease

Community rates of TB disease

Number of cases of TB disease in the facility during the preceding year

Number and percentage of staff and inmates with LTBI

**Slide 167: Focusing the Evaluation to Assess Risk and Performance Risk Assessment (2)**

Each facility should annually assess its level of TB risk and include the following indicators:

Facility transmission

Number and percentage of staff and inmates with TST conversion and reasons for conversion

Number of TB exposure incidents (contact investigations)
Evidence of person-to-person transmission

Slide 168: Performance Measurement for Improving Quality Examples
Timeliness of screening and isolation
Treatment
Continuity of care

Slide 169: Assessment of Collaboration (conduct annually)
Each facility should
Assess its relationship with local and state public health departments in
Screening
Containment
Assessment
Meet with respective public health staff to review facility
TB risk
Policies
Compliance with environmental control and respiratory protection recommendations

Slide 170: Collecting and Organizing Data (1)
Data sources
Review medical records
Annually, for facilities that house persons with confirmed or suspected TB disease (including low-risk facilities)
Quarterly, for facilities with numerous cases

Slide 171: Collecting and Organizing Data (2)
Information infrastructure
Health professionals responsible for TB control should have access to
Complete medical records
Database of essential TB-related activity and measurements

Slide 172: Collecting and Organizing Data (3)
Information infrastructure
Retrieval of aggregate record system is essential
For tracking all inmates
For assessing the status of persons who have TB disease and LTBI
Electronic medical databases can provide additional benefits

**Slide 173: Analyzing Data and Drawing Conclusions**

In a multifacility correctional system, compile data for each facility separately and in aggregate
Analyze data against standards which can be defined externally or internally as established by the program collaborators
Use data to develop recommendations for program improvement
Share evaluation and recommendations with program staff, administrators, and partners, including the local health departments

**Slide 174: Using Information to Improve the TB Program**

Program staff should use data to identify and remove barriers to improving performance
Administrators should make necessary revisions to policies and procedures
Existing data can be used to clearly demonstrate the effects of implemented interventions

**Slide 175: (Title Slide) Collaboration and Responsibilities**
[IMAGE: Inmate’s hands resting on cell bars.]

**Slide 176: Liaisons for TB-Associated Efforts**

Correctional facilities and health departments should each designate liaisons
Liaisons should be either responsible for, or familiar with, TB control
Liaisons should hold regular meetings with correctional facility and health department staff to discuss TB-control efforts
[IMAGE: Three people discussing TB-control efforts.]

**Slide 177: Roles and Responsibilities That Require Collaboration Between Correctional Facilities and Health Departments (1)**

Screening and treatment of inmates for LTBI and TB disease
Reporting of TB disease
Follow-up of inmates with symptoms or abnormal chest radiographs
Medical consultation regarding persons with confirmed and suspected TB disease
Slide 178: Roles and Responsibilities That Require Collaboration Between Correctional Facilities and Health Departments (2)

Contact investigations for reported TB cases

Continuity of treatment and discharge planning for persons with TB disease and LTBI

Training and education of correctional facility staff

Evaluation of screening and case management

Facility risk assessment

Slide 179: (Title Slide) References and Additional Resources

[IMAGE: Inmate’s hands resting on cell bars.]

Slide 180: References

MMWR Article Volume 55, No. RR-09 1-44 July 7, 2006. Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations from CDC(http://wwwdev.cdc.gov/mmwr/preview/mmwrhtml/rr5509a1.htm?s_cid=rr509a1_e)

Slide 181: Additional Resources

For additional information on TB, visit the CDC Division of Tuberculosis Elimination Website(http://wwwdev.cdc.gov/tb)