Tuberculosis Education for Health Care Personnel
Objectives

• Identify key changes in the 2019 guidelines for tuberculosis (TB) testing of health care personnel (HCP)
• Name the three components of a TB screening
• Explain the benefits of treating latent TB infection (LTBI), especially among HCP
Objectives (Concluded)

- List the key risk factors for
  - TB infection
  - Progression from LTBI to TB disease
- State the common symptoms of TB disease
- Describe the three key categories in the hierarchy of infection control
Background

• In May 2019, the National TB Controllers Association (NTCA) and the Centers for Disease Control and Prevention (CDC) issued updated guidelines for TB screening of HCP.

Who do the Guidelines Apply to?

• Individuals who work or volunteer in health care settings, including:
  - Inpatient and outpatient settings
  - Laboratories
  - Emergency medical services
  - Medical settings in correctional facilities
  - Home-based health care settings
  - Long-term care settings
# Key Changes to the Guidelines

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2019</th>
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<tbody>
<tr>
<td><strong>Screening</strong></td>
<td>• TB test upon hire</td>
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<td>• Symptom screen</td>
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<td>• Individual TB Risk Assessment</td>
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<tr>
<td><strong>Annual Testing</strong></td>
<td>• Determination based on the risk assessment for the health care setting</td>
<td>• No longer recommended unless there is increased occupational risk or ongoing TB transmission</td>
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<td>• Chest x-ray to exclude TB disease</td>
<td>• Chest x-ray and symptom screen to exclude TB disease</td>
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<td>• Annual symptom screen based on risk assessment for setting</td>
<td>• For HCP diagnosed with LTBI, strongly recommend</td>
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<td>✓ Treatment</td>
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<td>✓ Use of a short-course regimen</td>
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<td>• Specified topics to include in TB education</td>
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<td><strong>Positive TB Test</strong></td>
<td>• Recommended for all health care personnel</td>
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<td><strong>TB education</strong></td>
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TB Screening Upon Hire

CDC AND THE NATIONAL TUBERCULOSIS CONTROLLERS ASSOCIATION RECOMMEND

INDIVIDUAL TB RISK ASSESSMENT

SYMPTOM SCREENING

TB TESTING

FOR HEALTH CARE PERSONNEL UPON HIRE
Health Care Personnel (HCP) Baseline Individual TB Risk Assessment

HCP should be considered at increased risk for TB if any of the following statements are marked “Yes”:

- Temporary or permanent residence of ≥1 month in a country with a high TB rate
  - Any country other than the United States, Canada, Australia, New Zealand, and those in Northern Europe or Western Europe

- Current or planned immunosuppression, including human immunodeficiency virus (HIV) infection, organ transplant recipient, treatment with a TNF-alpha antagonist (e.g., infliximab, etanercept, or other), chronic steroids (equivalent of prednisone ≥15 mg/day for ≥1 month) or other immnosuppressive medication

- Close contact with someone who has had infectious TB disease since the last TB test

Symptom Screen

Screen for the following:

- A cough that lasts 3 or more weeks
- Coughing up blood
- Fatigue/weakness
- Weight loss
- Loss of appetite
- Chills or fever
- Night sweats
TB Testing

• Interferon gamma-release assay (IGRA) blood test

Or

• Tuberculin skin test (TST)
HCP with a Newly Positive TB Test

• Evaluate for TB disease
  ▶ Chest x-ray
  ▶ Screen for TB symptoms
  ▶ Collect and test sputa for individuals with respiratory symptoms

• For HCP diagnosed with LTBI:
  ▶ Treatment is strongly recommended, preferably with a short-course regimen
Short-Course Regimens for LTBI

- Treatment compliance is higher with short-course, rifamycin-based regimens compared to isoniazid (INH) regimens lasting 6 to 9 months.

- The short-course regimens are:
  - INH + rifapentine once weekly for 12 weeks, or
  - Rifampin daily for four months.
Why Treat LTBI?

• Treating LTBI prevents progression to TB disease
• Treating LTBI is essential to eliminating TB
  80% of new TB cases in the U.S. are due to progression from LTBI to TB disease
Why Treat LTBI? (concluded)

- By **not** progressing to TB disease you:
  - Cannot spread TB bacteria to the people you care about or anyone else
  - Can continue working and doing the activities you enjoy

- LTBI treatment can be completed in approximately 3 to 4 months
HCP with Untreated LTBI

- Monitor with an annual symptom screen to:
  - Detect early evidence of TB disease and
  - Re-evaluate the risks and benefits of LTBI treatment

- Continue to strongly recommend LTBI treatment if the benefits exceed the risks for the individual
• HCP may have risks for:
  - Exposure to TB unrelated to their U.S. work, and/or
  - Personal risks for progression from LTBI to TB disease

• If these risks are not recognized, HCP may develop TB disease and unknowingly transmit it to patients, co-workers, family and/or friends
Topics to be Covered

• Transmission of TB
• Risk factors for
  - TB infection
  - Progression to TB disease
• Signs and symptoms of TB
• TB infection control
  - Administrative measures
  - Environmental controls
  - Personal protective equipment (PPE)
• TB is an infectious bacterial disease that most commonly affects the lungs
• TB is spread from person to person through the air
Risk Factors for TB

- Birth, residence or travel (for 1 month or more) in a country with an elevated incidence of TB
- Immunosuppression due to:
  - Medical condition (e.g., HIV+, diabetes)
  - Medication (e.g., steroids or TNF-α inhibitors for rheumatoid arthritis)
- Close contact at any time with someone who has infectious TB
Risk Factors for Progression to TB

- Infection with TB within the past two years
- Close contacts of a case with infectious TB
- Immigrants from countries with a high incidence of TB
- Children less than 5 years of age with a positive TB test
Risk Factors for Progression (cont’d)

- Persons with medical conditions that weaken the immune system:
  - HIV infection
  - Diabetes
  - Severe kidney disease
  - Misuse of drugs or alcohol
• Persons taking medications that weaken the immune system
  - Immunosuppressive drugs (to prevent rejection of organ transplants)
  - Steroids (prednisone) or TNF-α inhibitors (etanercept) for rheumatoid arthritis
### Comparative Risk of Progression

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Risk of Developing TB</th>
<th>Description</th>
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<tr>
<td>TB infection and no risk factors</td>
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<td>For people with TB infection, <strong>no risk factors</strong>, and no treatment, the risk is about 5% in the first 2 years after infection and about 10% over a lifetime.</td>
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<td>About 10% over a lifetime</td>
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<tr>
<td>TB infection and diabetes</td>
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<td>For people with TB infection and <strong>diabetes</strong>, and with no treatment, the risk is three times as high, or about 30% over a lifetime.</td>
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<td>About 30% over a lifetime</td>
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<tr>
<td>TB infection and HIV infection</td>
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<td>For people with TB infection and <strong>untreated HIV infection</strong> and with no LTBI treatment, the risk is about 7% to 10% PER YEAR, a very high risk over a lifetime.</td>
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TB Signs and Symptoms

- A cough that lasts 3 or more weeks
- Coughing up blood
- Fatigue/weakness
- Weight loss
- Loss of appetite
- Chills or fever
- Night sweats
Occupational Risk of TB

• Overall, HCP have a low risk of occupational exposure to TB

• Occupational exposure risks are mitigated by infection control protocols:
  - Administrative
  - Environmental
  - Respiratory protection (such as personal protective equipment or PPE)
Hierarchy of Infection Control

**Administrative Controls**

Measures to reduce the risk of exposure to persons who might have TB disease

**Environmental Controls**

Measures to prevent the spread and reduce the concentration of infectious droplet nuclei in ambient air.

**Respiratory Protection**

Provides an extra layer of protection in situations that pose a high risk for exposure.
Administrative Controls

- Assign responsibility for infection control (IC)
- Complete a risk assessment of the facility or health care setting
- Develop and implement a written IC plan to ensure prompt detection, airborne protections and treatment of persons with suspected or confirmed TB disease
Administrative Controls (cont’d)

- Timely laboratory processing, testing and reporting of results to the ordering physician and IC team
- Proper cleaning and sterilization or disinfecting of potentially contaminated equipment
Environmental Controls

- Primary
  - Use of local exhaust ventilation (e.g., hoods, tents or booths)
  - Use of general ventilation to dilute and remove contaminated air
Environmental Controls

• Secondary
  - Controlling airflow (e.g., airborne infection isolation [AII] rooms) to prevent contamination of the air in adjacent areas
  - Cleaning the air by using high efficiency particulate air (HEPA) filtration or ultraviolet germicidal irradiation (UVGI)
Respiratory Protection

• Implement a respiratory-protection program
  - Including the appropriate use of personal protective equipment (PPE)
• Train HCP on respiratory protection
• Train patients on respiratory hygiene and cough etiquette procedures
• Know the risk factors for
  - Exposure to TB
  - Progression from TB infection to TB disease

• Know the signs and symptoms of TB

• Get tested for TB if you are exposed to someone with TB

• If diagnosed with LTBI, complete treatment
• Familiarize appropriate staff with the three categories of infection control
  - Administrative controls
  - Environmental controls
  - Respiratory protection
Questions or Comments?