Tuberculosis Education for Health Care Personnel

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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

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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

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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

Sosa LE, Njie GJ, Lobato MN, et al. Tuberculosis Screening, Testing, and Treatment of U.S. Health Care Personnel: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019. MMWR Morb Mortal Wkly Rep 2019;68:439 443. DOI:

http://dx.doi.org/10.15585/mmwr.mm6819a3

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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

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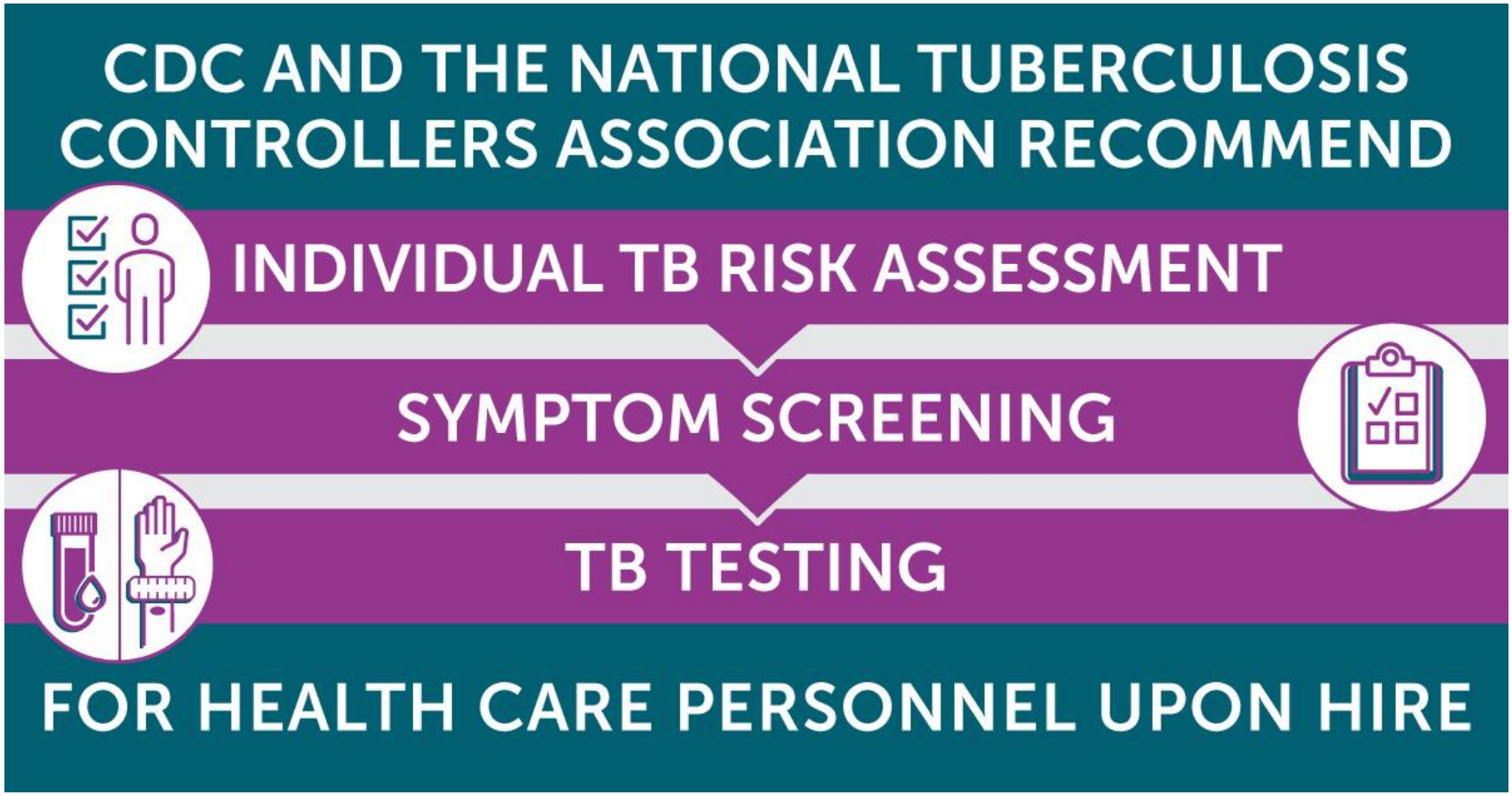
Key Changes to the Guidelines

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

TB Screening Upon Hire



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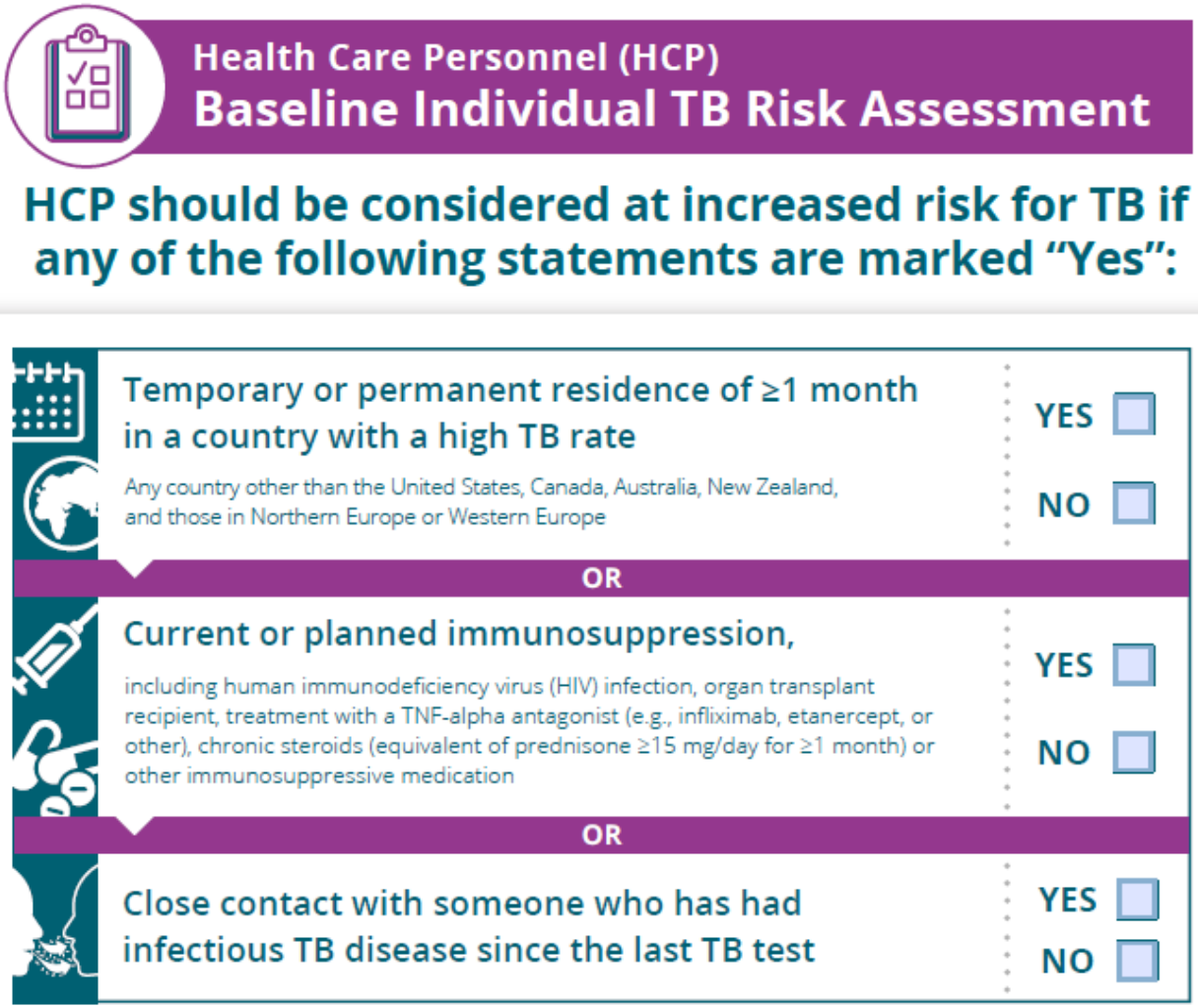
TB Risk Assessment Tool



https://www.cdc.gov/tb/topic/infectioncontrol/pdf/healthCareSettings-assessment.pdf

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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

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TB Testing

- Interferon gamma-release assay (IGRA) blood test

Or

- Tuberculin skin test (TST)

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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

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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

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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

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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

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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

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Rationale for Annual TB Education

- 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

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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)

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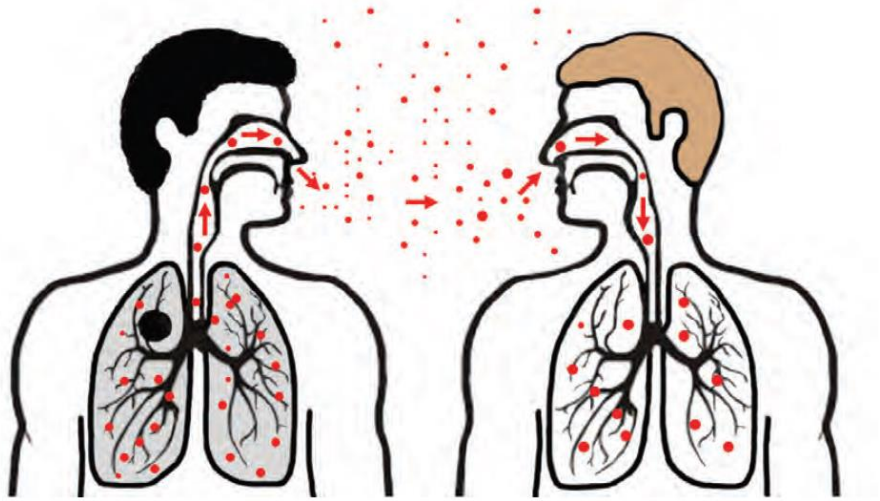
TB Transmission

- TB is an infectious bacterial disease that most commonly affects the lungs
- TB is spread from person to person through the air



Visual: CDC Core Curriculum on Tuberculosis, Chap. 2, Figure 2.2

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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

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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

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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

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Risk Factors for Progression (cont'd)

- 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

Risk Factor	Risk of Developing TB	Description
TB infection and no risk factors	 About 10% over a lifetime	For people with TB infection, **no risk factors**, and no treatment, the risk is about 5% in the first 2 years after infection and about 10% over a lifetime.
TB infection and diabetes	 About 30% over a lifetime	For people with TB infection and **diabetes**, and with no treatment, the risk is three times as high, or about 30% over a lifetime.
TB infection and HIV infection	 About 7% to 10% PER YEAR	For people with TB infection and **untreated HIV infection** and with no LTBI treatment, the risk is about 7% to 10% PER YEAR, a very high risk over a lifetime.

Visual: CDC Core Curriculum on Tuberculosis, Chap. 2, Figure 2.5

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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

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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)

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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.

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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

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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

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Environmental Controls

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

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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

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Summary

- 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

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Summary (cont'd)

- Familiarize appropriate staff with the three categories of infection control
  - Administrative controls
  - Environmental controls
  - Respiratory protection

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Questions or Comments?

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