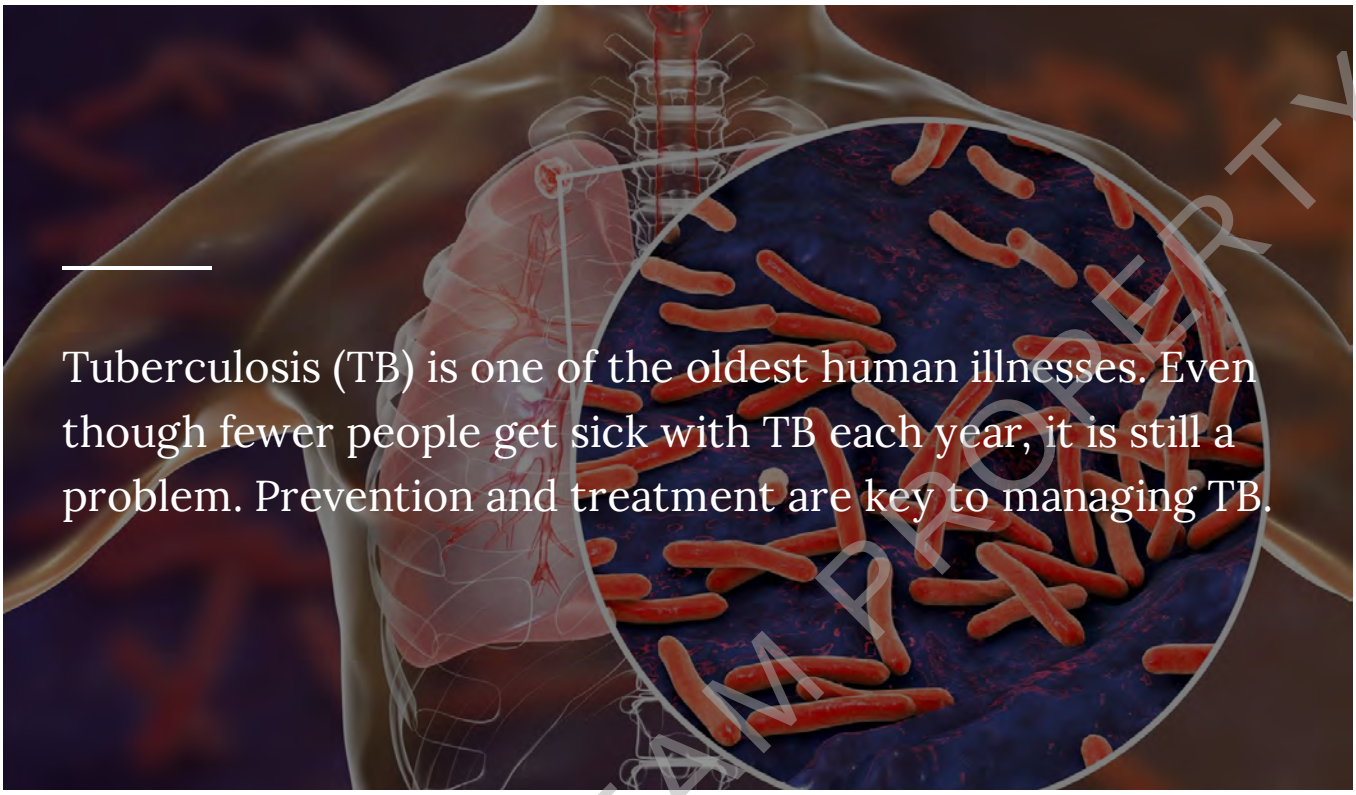
SQ Acute: Infection, Tuberculosis

HealthStream™

Welcome to **SQ: Infection, Tuberculosis**.
Select START MODULE to begin.
Be sure to click on the interactive elements to advance.

- Introduction
- Tuberculosis Overview
- Risk Factors and Symptoms
- Testing and Treatment
- Prevention
- Module Conclusion

Introduction



Tuberculosis (TB) is one of the oldest human illnesses. Even though fewer people get sick with TB each year, it is still a problem. Prevention and treatment are key to managing TB.

This module will review the following:

- Transmission of tuberculosis (TB)
- Risk factors for TB infection
- Measures to prevent TB

Please look at these important terms.

Select "+" to expand.

Glossary

Airborne precautions

Actions taken by healthcare workers to prevent and reduce the spread of germs through the air

Human immunodeficiency virus (HIV)

A virus that attacks cells that help the body fight infection

Immune system

The network of cells, tissues, and organs that work together to protect the body against disease

Infection

A disease caused by germs

NIOSH-certified

Approved by the National Institute for Occupational Safety and Health

Let's get started!

Complete the content above before moving on.

Tuberculosis Overview

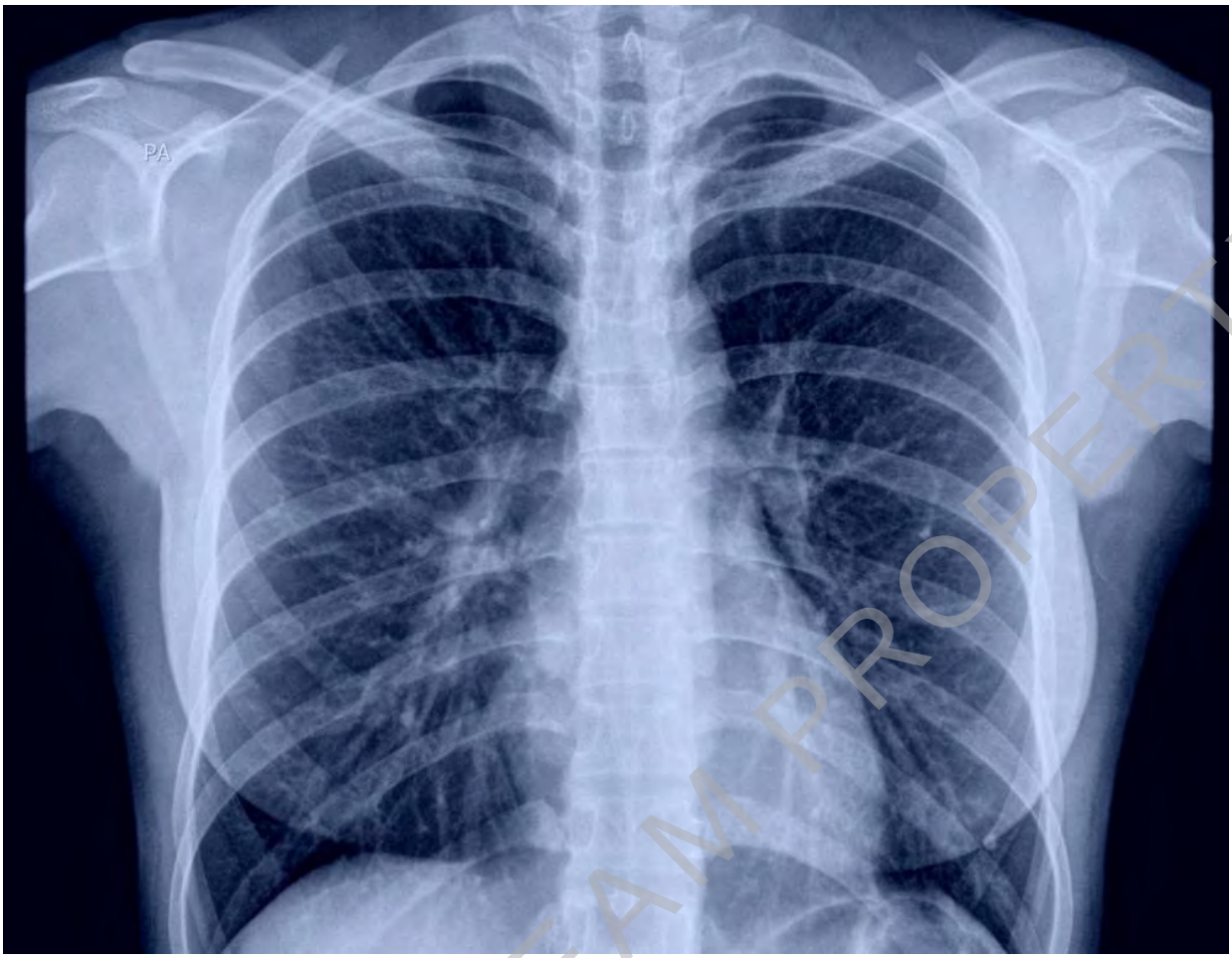
Tuberculosis is a disease that affects the lungs. It can spread from person to person. TB can also move to other body parts like the kidneys, brain, and spine.

The primary germ that causes TB is *Mycobacterium tuberculosis*.

TB spreads through the air. Tiny droplets filled with germs spray into the air when someone with active TB coughs, sneezes, laughs, speaks, or sings. People nearby may breathe in these droplets and become infected.

There are two states of TB: latent TB infection and active TB disease.

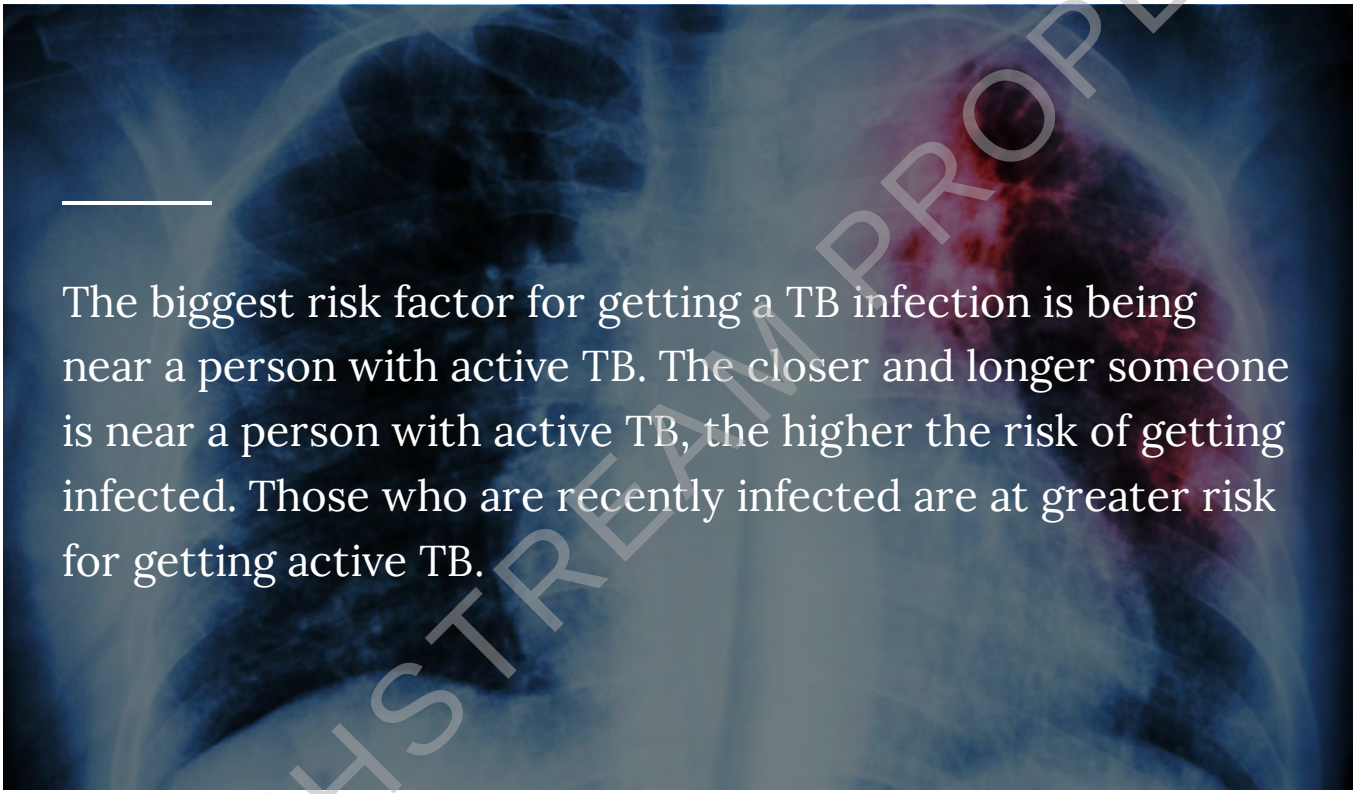
Latent TB infection (LTBI) happens when a person's body stores inactive germs after exposure to TB. The infected person has no symptoms and cannot spread TB to others. The person may test positive for TB but have a normal chest x-ray.



Active TB disease happens when the TB germs attack a person's immune system and spread. This changes LTBI to active TB. This person usually feels sick with a cough and fever. They can spread TB to others.

CONTINUE

Risk Factors and Symptoms



Other risk factors include:

Weak immune systems

People who are already sick may be more likely to get TB. This is true for people with human immunodeficiency virus (HIV), diabetes, or cancer. Babies

and young children are at risk because their immune systems are still developing.

Areas with high infection rates

People are more likely to get TB if they are exposed to people who have come from areas of the world with many cases of active TB. A person is also at high risk if they live or travel to an area with many cases of active TB.

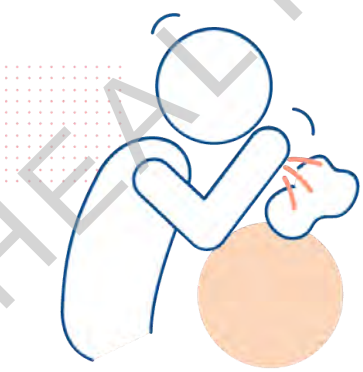
Poor nutrition and substance use

People without medical care or good food may not have healthy bodies to fight off a TB infection. Using drugs or other substances can weaken the immune system and put someone at risk.

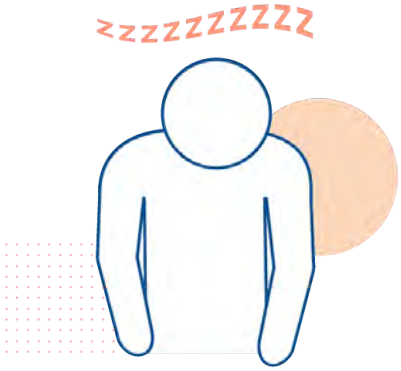
Living and working conditions

People who live or work in prisons, homeless shelters, hospitals, or nursing homes may be more likely to get TB. Some places have too many people in the space or weak air movement.

Here are some common symptoms of active TB:



Coughing up blood

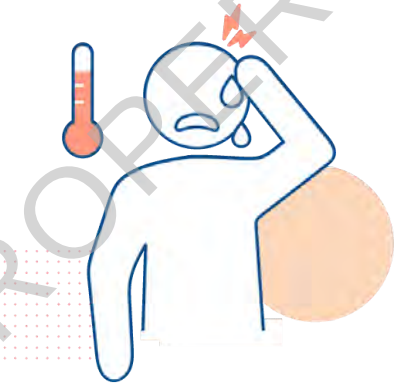


Fatigue

Coughing that lasts more than three weeks

Chest pain

Loss of appetite or weight loss



Fever, chills, and night sweats

CONTINUE

Testing and Treatment

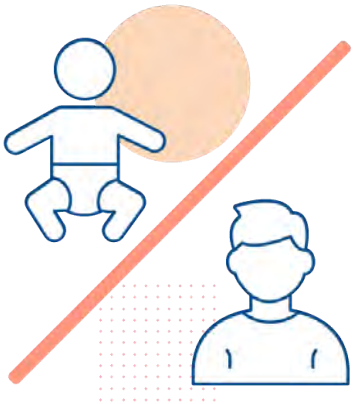
Treating people with LTBI is key to preventing the spread of TB. TB tests help detect people with LTBI. Test anyone at high risk for TB.

High-risk individuals include:

Healthcare workers

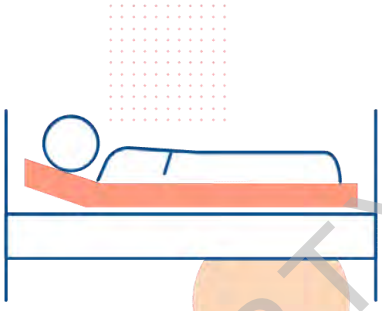
People from a country where TB is common

People with HIV



Babies and young children

Older people



People who have a weak immune system

Screening Questions for Risk Factors

Healthcare workers who answer yes to the following questions are at increased risk of TB:

1. Has the healthcare worker been a resident in a country with a high TB rate for at least one month? This includes all countries except Australia, Canada, New Zealand, the United States, and countries in western or northern Europe.
2. Is the healthcare worker now, or will they be immunosuppressed? This includes HIV, organ transplant, treatment with a medicine that suppresses the immune system, and chronic steroids.
3. Has the healthcare worker been in close contact with someone who has infectious TB since the healthcare worker's last TB test?

Types of TB Tests

There are two types of TB tests—skin and blood. The skin test is the most common. A small amount of TB protein is placed just under the skin on the forearm. If a bump shows up 48 to 72

hours later, the person may have latent or active TB. A chest x-ray can help confirm active TB disease.

The CDC makes recommendations in four areas (Level D):

Screening

Test newly hired healthcare workers for TB. The test should include a risk assessment, symptom screening, and a blood or skin test for those without prior TB or LTBI. This baseline testing allows for comparison if a person were to be exposed in the future. Employees do not need an annual TB test unless they are exposed or there are ongoing transmission risks. Healthcare workers with documented prior LTBI or TB disease do not need another test for infection after exposure.

Post-exposure testing

Test healthcare workers exposed to TB. If the first test is negative, do another test eight to ten weeks after their last exposure. Should a worker be suspected of having TB, notify the local health department immediately.

Treatment of a positive TB test

Treat a healthcare worker who tests positive for TB or has untreated LTBI. Treatments lasting three to four months are easier to complete than longer courses of treatment. Healthcare workers who are not treated or did not complete LTBI treatment require annual screening and education about the risks and benefits of treatment.

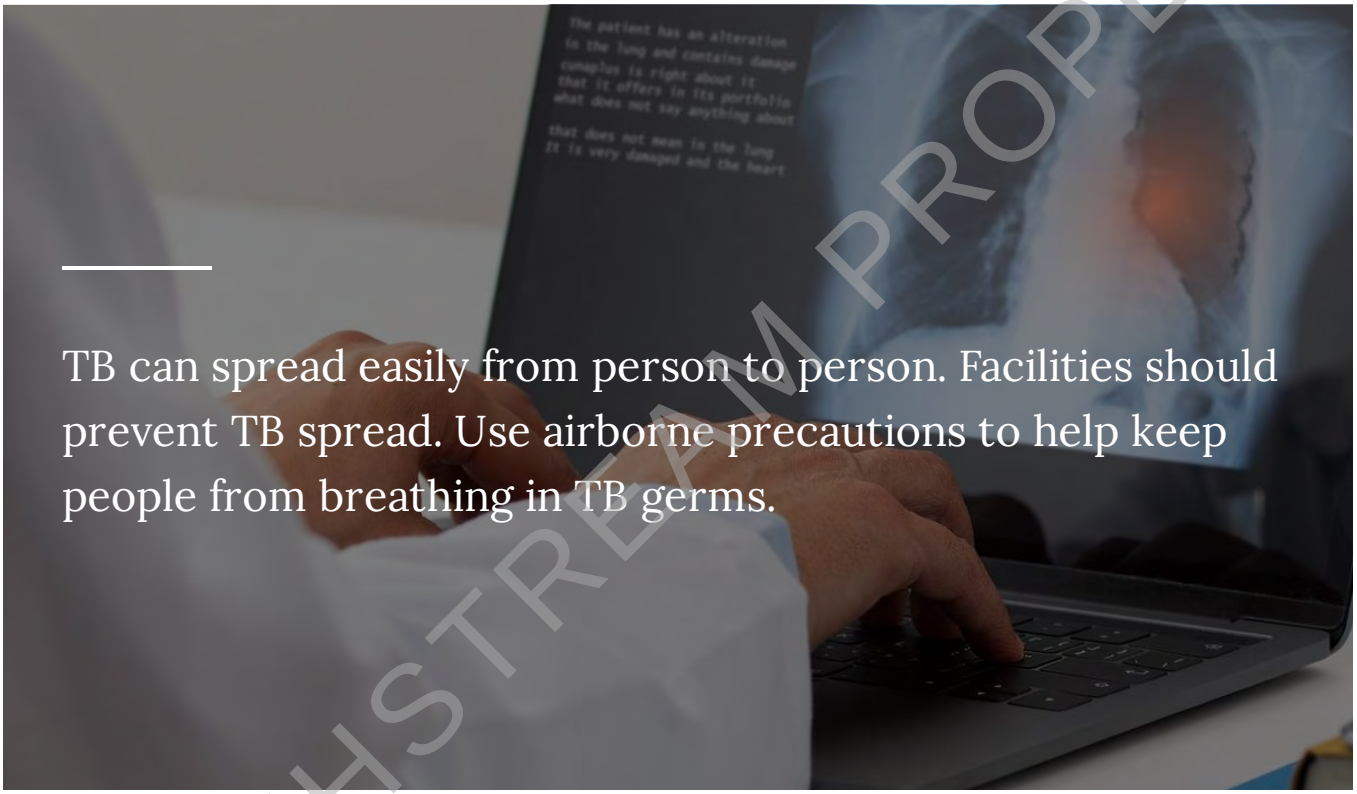
TB education

Educate all healthcare workers about TB every year. Include information about TB risk factors, signs and symptoms of TB disease, and infection control policies and procedures.

Public health agencies can help facilities with technical assistance and consultation related to the diagnosis and treatment of LTBI. They can also help the facility understand state and local regulations, requirements, and guidelines.

CONTINUE

Prevention



TB can spread easily from person to person. Facilities should prevent TB spread. Use airborne precautions to help keep people from breathing in TB germs.

Airborne Precautions (Level D)

- Place people with TB in rooms designed to remove air through a vent to the outside.

- Hands should always be cleaned before entering and when leaving a person's room.
- Always close the person's door.
- Before entering the room, put on a well-fitted N-95 or higher mask/respirator. Take off the mask/respirator after leaving the room.
- The facility is responsible for providing the following:
  - Different types of masks/respirators so every healthcare worker can find one that fits correctly.
  - Masks/respirators that work for all types of hazards a healthcare worker might face.
  - Masks/respirators that are NIOSH-certified.

Vaccination

There is a vaccine for TB called bacille Calmette-Guérin (BCG). BCG is common in countries with high rates of TB. It is not common in the United States. A person vaccinated with BCG may have a positive TB skin test even if they do not have TB. The BCG vaccine does not affect a TB blood test.

Consider the BCG vaccine for children or healthcare workers who face continual TB exposure (Level D).

Choose the best option and select SUBMIT.

When should healthcare workers be tested for TB?

- ◯ After hire, then once a year
- ◯ After hire, then only if exposed to TB
- ◯ Only once a year
- ◯ Only if exposed to TB

SUBMIT

Complete the content above before moving on.

Module Conclusion

This module has reviewed the following:

- Transmission of TB
- Risk factors for TB infection
- Measures to prevent TB

For more data on TB and how to prevent it, visit the CDC website.

References

Centers for Disease Control and Prevention. (2005, December 30). *Guidelines for preventing the transmission of Mycobacterium tuberculosis in health-care settings, 2005*. U.S. Department of Health and Human Services.

https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm?s_cid=rr5417a1_e

Centers for Disease Control and Prevention. (2011, October). *TB elimination: BCG vaccine*. [PDF]. U.S. Department of Health and Human Services. https://www.cdc.gov/tb/publications/factsheets/prevention/BCG.pdf

Centers for Disease Control and Prevention. (2011, October 28). *Tuberculosis: General information fact sheet*. U.S. Department of Health and Human Services. https://www.cdc.gov/tb/publications/factsheets/general/tb.htm

Centers for Disease Control and Prevention. (2014, October 20). *The difference between latent TB infection and TB disease*. U.S. Department of Health and Human Services. https://www.cdc.gov/tb/publications/factsheets/general/ltbiandactivetb.htm

Centers for Disease Control and Prevention. (2016, March 15). *TB prevention*. U.S. Department of Health and Human Services. https://www.cdc.gov/tb/topic/basics/tbprevention.htm

Centers for Disease Control and Prevention. (2016, March 18). *TB risk factors*. U.S. Department of Health and Human Services. https://www.cdc.gov/tb/topic/basics/risk.htm

Centers for Disease Control and Prevention. (2016, March 21). *Exposure to TB*. U.S. Department of Health and Human Services. https://www.cdc.gov/tb/topic/basics/exposed.htm

Centers for Disease Control and Prevention. (2023a, November 22). *III. Precautions to prevent transmission of infectious agents*. https://www.cdc.gov/infection-control/hcp/isolation-precautions/precautions.html

Centers for Disease Control and Prevention. (2023b, December 15). *Clinical testing guidance for tuberculosis: Health care personnel*. https://www.cdc.gov/tb-healthcare-settings/hcp/screening-testing/index.html

Centers for Disease Control and Prevention. (2024, June 14). *Tuberculosis vaccine*. https://www.cdc.gov/tb/vaccines/index.html

Occupational Safety and Health Administration. (n.d.). *Tuberculosis*. U.S. Department of Labor. https://www.osha.gov/tuberculosis

Sosa L. E, Njie G. J., Lobato M. N., et al. (2019, May 17). *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

This is the end of the module. To exit and return to the Activity Details, select **EXIT**.