Tuberculosis

Education Module for Students – Advanced Practice Providers - Residents - Faculty

Greater Green Bay Health Care Alliance

ggbha.org

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Overview

- What is Tuberculosis?
- Disease Process & Transmission
- Prevention
- Symptoms
- Diagnosis & Treatment
- High Risk Populations

TUBERCULOSIS

While completing this module, please know YOU are responsible for understanding the information presented.

If you have any questions, please contact your instructor / school / facility for answers prior to submitting your final 'Confidentiality Agreement and Acknowledgement of Orientation Modules' form.

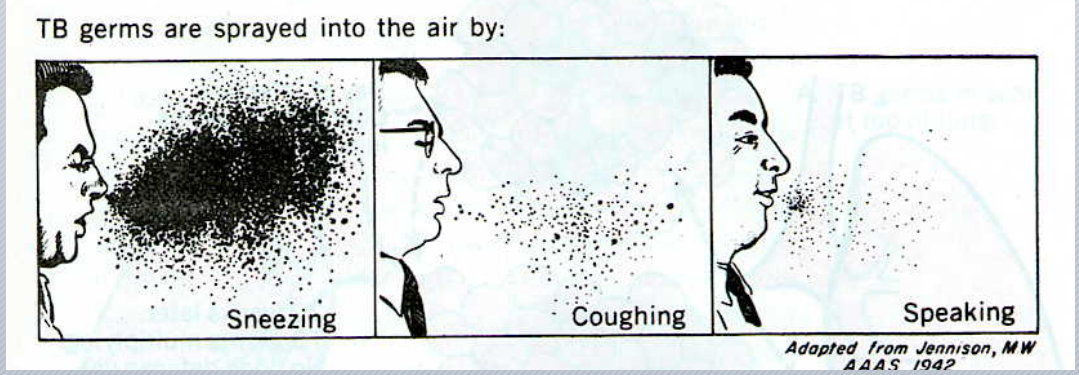
What is Tuberculosis?

- **Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis and is commonly called TB.**
- **When inhaled, TB bacteria may settle into lung tissue and multiply.**

- **Types if Tuberculosis infections:**
  - **Latent infection**
    - Early stages of Tuberculosis infection
    - Asymptomatic
    - Not yet infectious
  - **Tuberculosis Disease**
    - Late- stage Tuberculosis infection
    - Symptomatic
    - Highly infectious to others

Tuberculosis Transmission

- TB is transmitted by the inhalation of infectious droplets containing M. tuberculosis and their integration into healthy alveoli
  - TB is spread by:

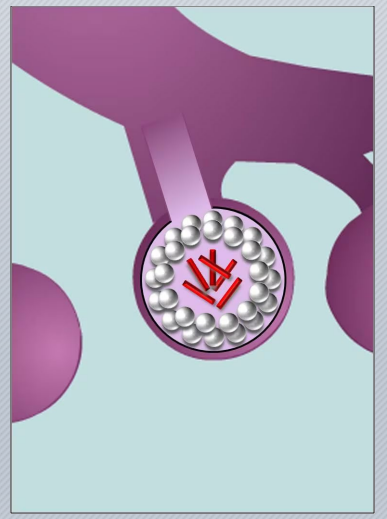


  - Infectious particles can be suspended in the air for several hours after initial presentation depending on the environment

Transmission continued

- The immune system takes 2 to 10 weeks to halt replication of M. tuberculosis after initial infection

- If uncontrolled by the immune system, bacteria continue to replicate, and the disease progresses to becoming infectious to others. Immunocompromised patients with latent TB are at greatest risk for progression to active disease.



High-Risk Populations

- Employees of facilities with large populations
- Health Care workers who serve patients with Tuberculosis Disease
- Infants & Children <5 years of age who are exposed to adults at high risk or with infectious disease.
- People who travel to or are originally from countries with high rates of TB disease.
- Low-income populations
- People who currently live or once lived in facilities with large populations or in large group settings
- Immunocompromised individuals/ Individuals with Chronic Diseases
- Contacts of Individuals with presumed infectious TB disease

Latent TB vs. TB Disease

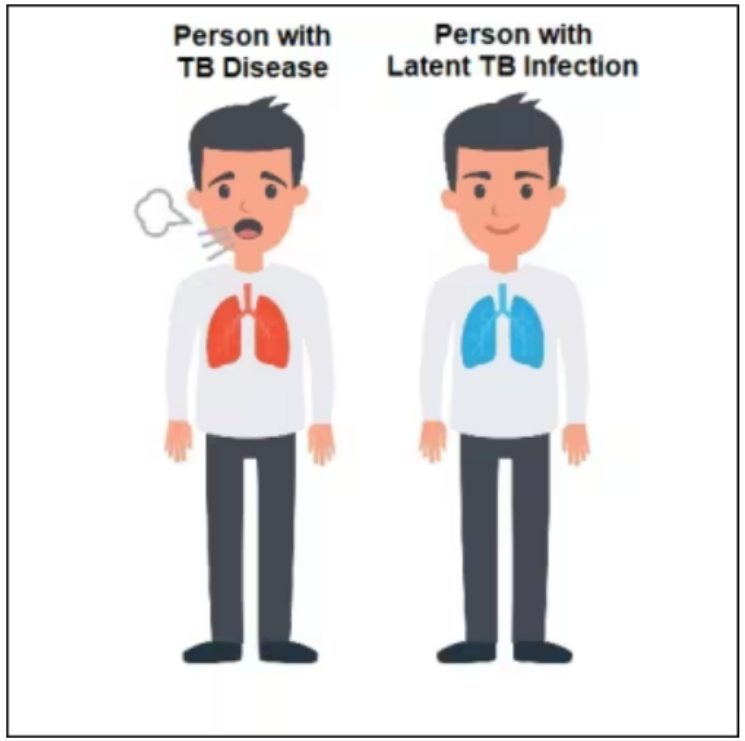
Differences Between Latent TB Infection and TB Disease

Persons with Latent TB Infection (LTBI):

- Do not feel sick
- Do not have any symptoms
- Cannot spread TB bacteria to others
- Can have latent TB infection for years
- Are at risk for developing TB disease
- Have a small amount of TB germs in their body that are alive but inactive
- Usually have a positive TB blood test (interferon-gamma release assay [IGRA]) or TB skin test (Mantoux tuberculin skin test [TST]) result indicating TB infection
- Should consider treatment for LTBI to prevent TB disease

Persons with TB Disease:

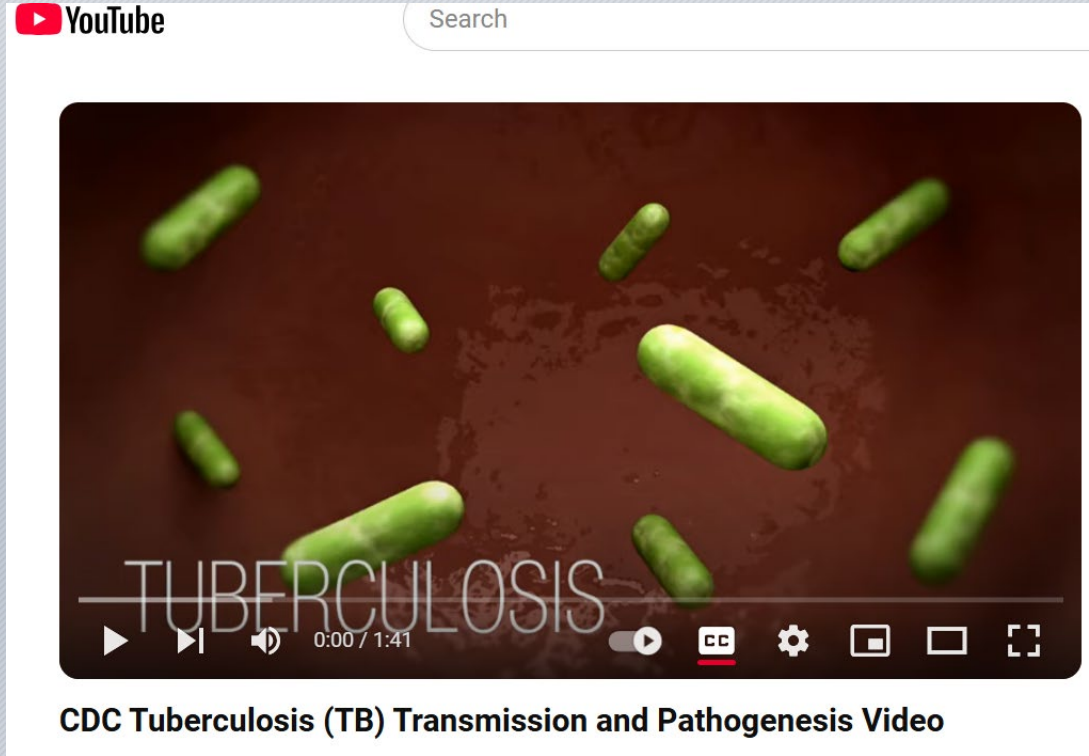
- Usually feel sick
- Usually have one or more symptoms
- May be able to spread TB bacteria to others
- Have a large amount of active TB germs in their body
- Usually have a positive TB skin test or TB blood test result indicating TB infection
- Need treatment for TB disease



Persons with latent TB infection do not feel sick and cannot spread TB bacteria to others. Persons with TB disease usually feel sick and may be able to spread TB bacteria to others.

CDC Video

- Youtube



Symptoms of Tuberculosis

- Cough lasting longer than three weeks
- Chest Pain
- Fever
- Weight Loss
- Night Sweats
- Coughing up blood or sputum
- Fatigue
- Decreased Appetite

Preventing the Spread of TB

Infection Control

Since TB is an airborne disease that can be transmitted from one person to another, it is important to practice appropriate **infection control procedures** to protect others from getting TB.

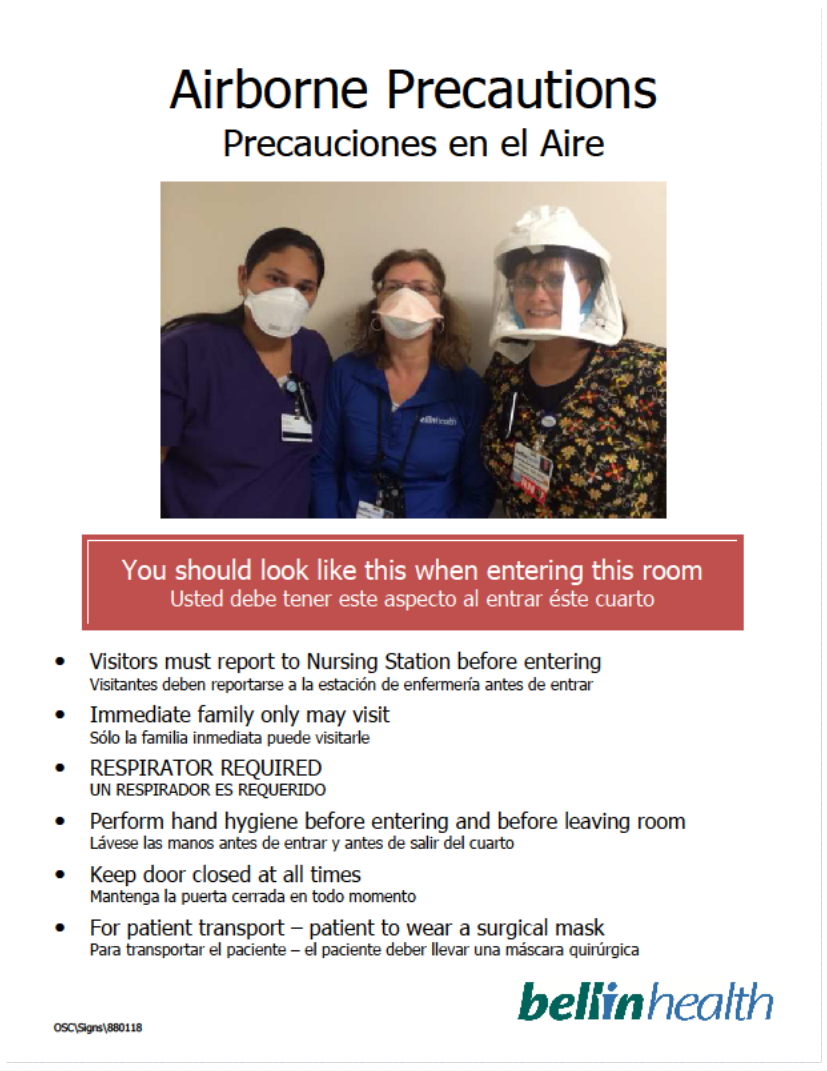
This is especially important for health care facilities and other **congregate settings** such as nursing homes, correctional facilities, homeless shelters, drug treatment centers, and other places that serve clients who are at risk for being infected with *M. tuberculosis.* All health care facilities need an infection control program. This program should be designed to ensure early and prompt

- Detection of TB
- Airborne precautions to prevent the spread of TB
- Treatment of persons who have suspected or confirmed TB disease

The minimum respiratory protection a health care worker should wear is a **filtering facepiece respirator (FFR)** to prevent the inhalation of airborne droplet nuclei. Patients with infectious TB should wear a **surgical mask** to prevent expelling droplet nuclei into the air.

The TB patient (left) is wearing a surgical mask. The health care worker (right) is wearing a filtering facepiece respirator (FFR).

PPE Requirements for Caring for Patients with suspected or diagnosed TB Disease



- Follow Institutional Policies for AIRBORNE PRECAUTIONS
  - Doors are kept closed
  - Air is vented to the outside (negative pressure room)
  - Only students who have been fit tested or respirator trained should enter the room of a patient with TB disease.
  - PPE (above) must be donned prior to entering the room.

Tuberculosis Diagnosis

- Diagnosis:
  - Interferon Gamma Release Assay (IGRA Blood Test)
  - Mantoux Tuberculin Skin Test (TB Skin Test)
  - Chest X-ray
  - Sputum Smear and culture to check for tuberculosis bacteria
  - Further lab tests for bacterial resistance

Treatment of Latent TB

- Treatment of latent TB infection (LTBI) is essential to control and eliminate TB in the United States because it substantially reduces the risk that latent TB infection will progress to TB disease. LTBI is treated to prevent TB disease.

- More than 80% of people who develop TB disease in the United States each year get sick from longstanding, untreated latent TB infection.

- In people who have weakened immune systems, the TB bacteria can become active, multiply, and cause TB disease. Treatment can prevent people with latent TB infection from getting sick with TB disease.

Treatment of TB cont.

- Latent TB Infection Treatment Regimens
  - Patients are more likely to complete shorter treatment regimens.
  - Examples of optional treatments include:
    - **3HP:** A combination regimen of isoniazid (INH) and rifapentine (RPT) once weekly* for 12 weeks (3 months).
    - **4R:** Rifampin (RIF) daily* for 4 months.
    - **3HR:** A combination regimen of isoniazid (INH) and rifampin (RIF) daily* for 3 months.
    - **6H:** Isoniazid (INH) daily or twice weekly** for 6 months.
- Treatment for TB disease must contain several drugs to which the tubercle bacilli are susceptible.
  - Treating TB disease with several drugs simultaneously is more effective at killing all of the tubercle bacilli and helps to prevent drug resistance.
  - The same drugs used to treat latent TB are used to treat TB disease.
- Listen to stories from individuals treated for Latent TB. https://youtu.be/inJNL2DLiA8

TUBERCULOSIS- CONCLUSION

After completing all **five modules and you understand the information presented**, you will need to complete the '**Confidentiality Agreement and Acknowledgement of Orientation Modules**' form. Please give the completed form to your school coordinator or faculty member, **not** the healthcare facility. The school will retain your signed/dated form.

The five learning modules need to be completed annually by students / advanced practice providers / residents / faculty.