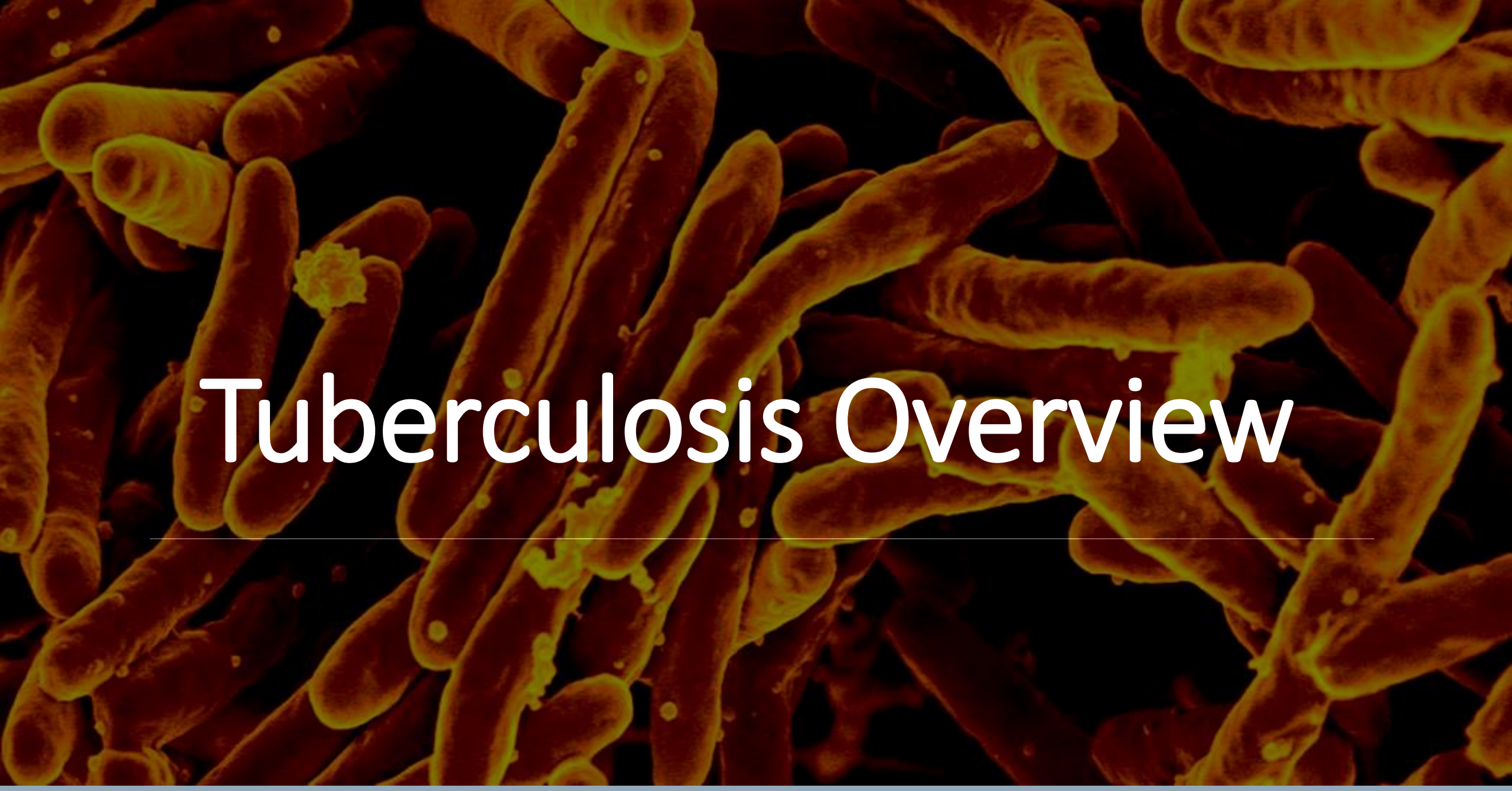
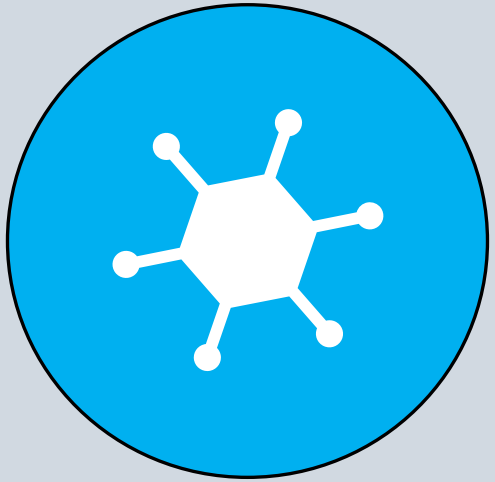


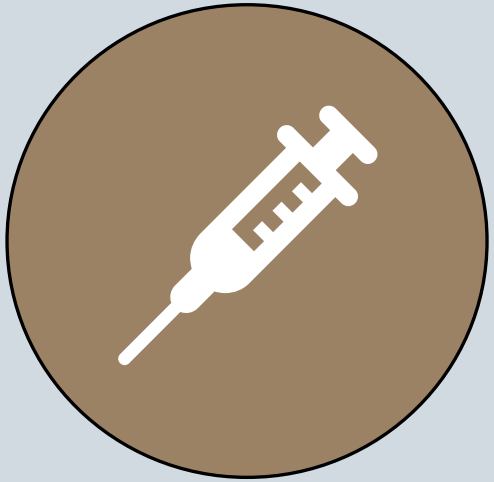
Tuberculosis Overview

Tuberculosis (TB)



CAUSES

SYMPTOMS



TREATMENT

Background

Caused by a bacterium called *Mycobacterium tuberculosis.*

Johann Schonlein coined the term “tuberculosis” in 1834, though it is estimated that *Mycobacterium tuberculosis* may have been around as long as 3 million years.

TB in humans can be tracked back to 9,000 years ago in Atlit Yam, a city now under the Mediterranean Sea, off the coast of Israel.

- Found in the remains of a mother and child buried together.

Background

The bacteria usually attack the lungs, but can attack any part of the body, including the kidney, spine, and brain.

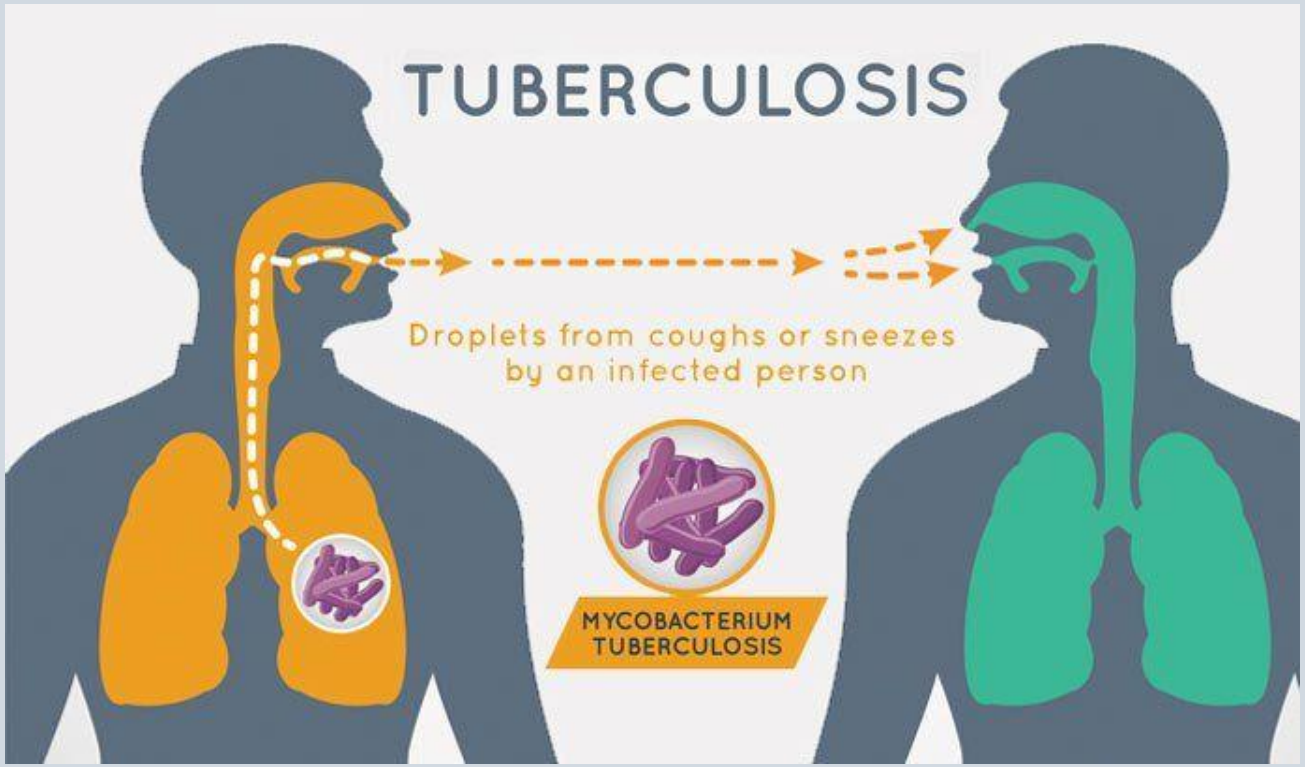
Not everyone infected with TB become sick.

- Two conditions exist:
  - Latent TB
  - TB Disease

TB Disease, if not treated properly, can be fatal.

Testing

- Tuberculin Skin Test (TST)
- Blood test
  - These two tests do not tell whether the person has latent TB or active TB infection.



Causes/Transmission

Spread through the air from one person to another.

- Coughing, speaking and/or singing.
- People nearby may breathe in the air and become infected.

NOT spread by:

- Shaking someone's hand
- Sharing food/drink
- Touching bed linens or toilet seats
- Sharing toothbrushes
- Kissing

Causes/ Transmission

Incubation Period

Latent TB

- 2-10 weeks from infection to demonstrable primary lesion or significant tuberculin skin test (TST) reaction and positive interferon-gamma release assay (IGRA).

TB Disease

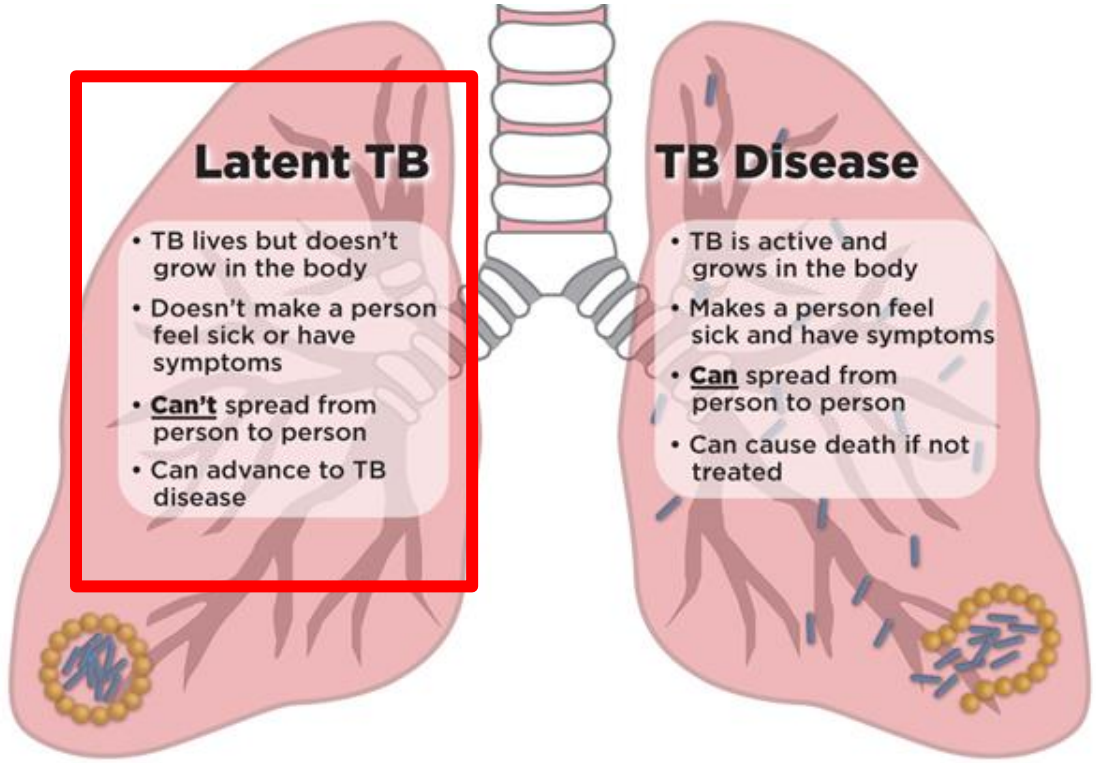
- Ambiguous
- Fewer than 10% of latently infected persons will develop active TB in their lifetime.
- Half or 5%, will develop active TB within 18 months after initial infection.

TB disease in the lungs or throat can be infectious.

TB in other parts of the body, such as the kidney or spine, is usually not infectious.

People with TB disease are most likely to spread it to people they spend time with every day, including family members, friends, and coworkers or schoolmates.

Clinical Features - Latent Tuberculosis



https://hivinfo.nih.gov/understanding-hiv/fact-sheets/hiv-and-tuberculosis-tb

Many who have latent TB infection never develop TB disease.

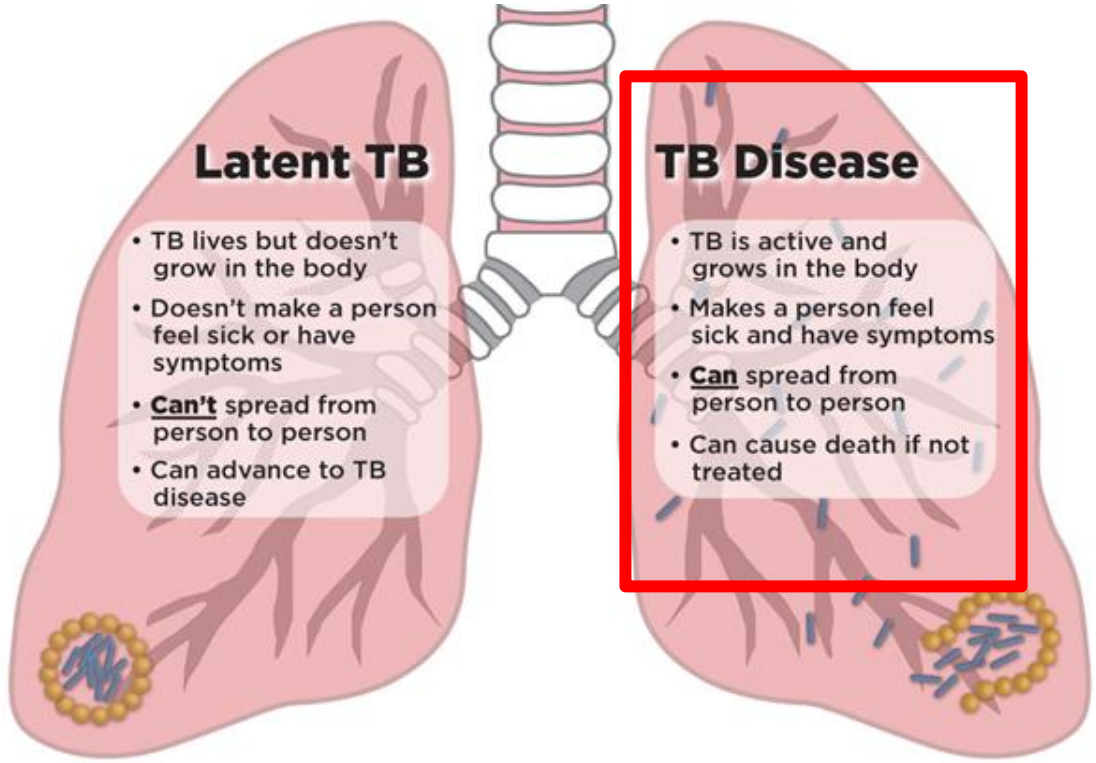
TB bacteria remain inactive for a lifetime without causing disease.

- Can have a skin/blood test result indicating TB infection.
- Has a normal chest x-ray and a negative sputum smear.

However, in other people, especially those who are immunocompromised, the bacteria can become active, multiply, and cause TB disease.

Needs treatment for latent TB infection to prevent TB disease.

Clinical Features - Tuberculosis Disease



https://hivinfo.nih.gov/understanding-hiv/fact-sheets/hiv-and-tuberculosis-tb

Symptoms:

- A bad cough that lasts 3 weeks or longer
- Pain in the chest
- Coughing up blood or sputum
- Weakness/fatigue
- Weight loss
- No appetite
- Chills
- Fever
- Sweating at night

Usually has a skin/blood test result indicating TB infection.

May have an abnormal chest x-ray or positive sputum smear or culture.

Needs treatment to treat TB disease.

Risk Factors/Groups

People with HIV infection

People who became infected with TB bacteria in the last 2 years

Babies and young children

People who inject illegal drugs

People who are sick with other diseases that weaken the immune system, like:

- Substance abuse
- Silicosis
- Diabetes mellitus
- Organ transplants
- Head and neck cancer

Elderly people

People who were not treated correctly for TB in the past

Treatment for Latent TB Infection (LTBI)

Several treatment regimens in the United States:

- Isoniazid (INH)
- Rifapentine (RPT)
- Rifampin (RIF)
- Can be used on their own or in combination
  - Detailed regimens available at: https://www.cdc.gov/tb/topic/treatment/ltbi.htm

CDC and NTCA recommend short-course, rifamycin-based 3 or 4-month LTBI treatment over 6 to 9-month isoniazid monotherapy.

Treatments must be modified if the patient is a contact of an individual with drug-resistant TB disease.

Treatment for TB Disease

Like LTBI, there are several treatment regimens recommended in the United States:

- Can take 4, 6, or 9 months depending on the regimen
  - https://www.cdc.gov/tb/topic/treatment/tbdisease.htm
- Shorter regimens can help patient complete treatment faster.
- Can vary based on if the patient has drug-resistant TB or coexisting medical conditions such as HIV or diabetes.

Prevention Measures

If you have latent TB infection and in a high-risk group, seek treatment from a healthcare provider to prevent the development of TB disease.

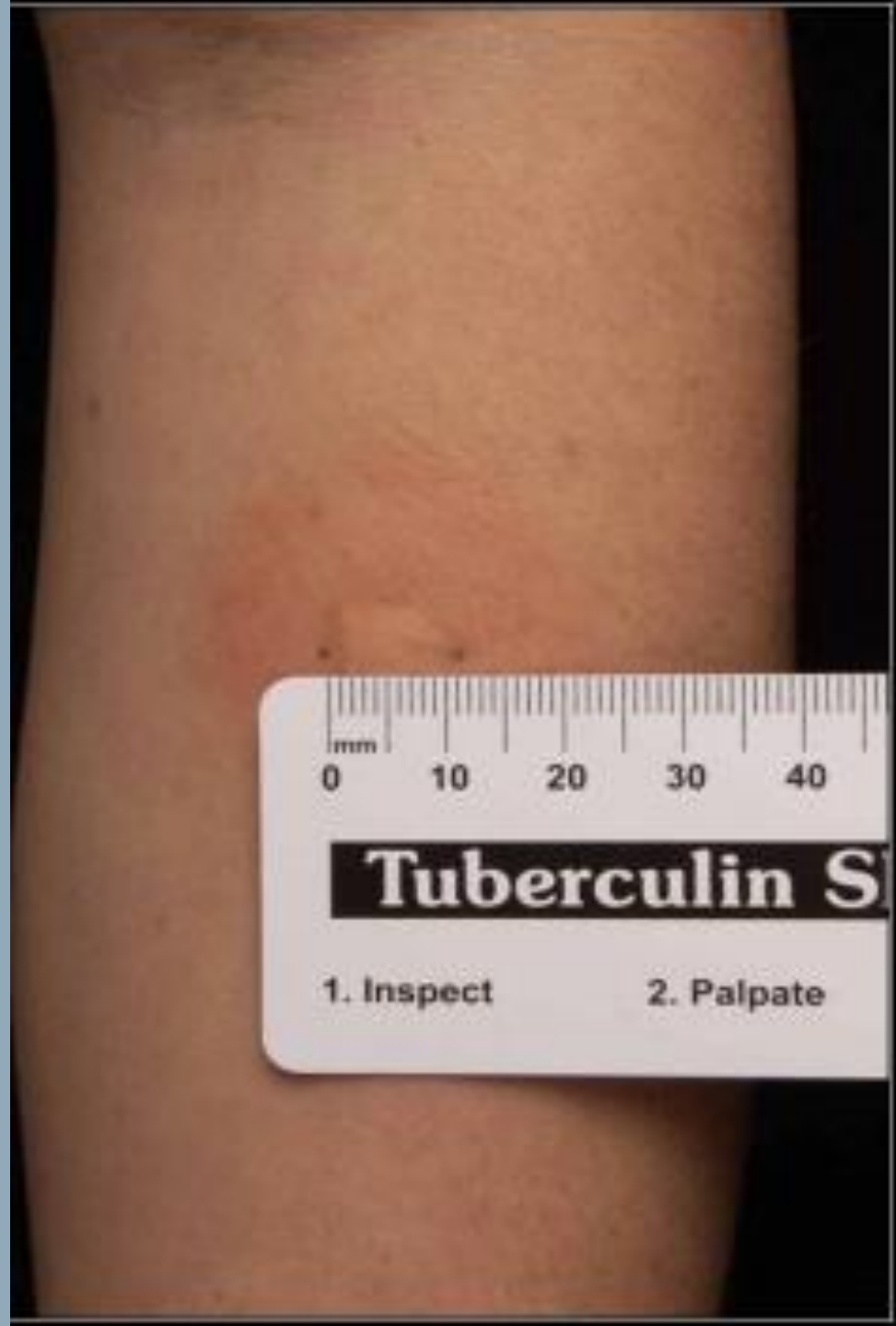
When traveling, avoid close contact or prolonged time with known TB patients in crowded, enclosed environments.

- Clinics, hospitals, prisons, or homeless shelters.

Travelers who will be working in clinics, hospitals or other healthcare settings where TB patients are likely to be encountered should consult infection control or occupational health experts about procedures.

Travelers who anticipate possible prolonged exposure to people with TB such as the above settings, should have a TB skin or blood test before leaving the United States.

- If negative, they should have a repeat test 8 to 10 weeks after returning to the US.
- Annual testing may be recommended for those who anticipated repeated or prolonged exposure or an extended stay over a period of years.



Vaccines

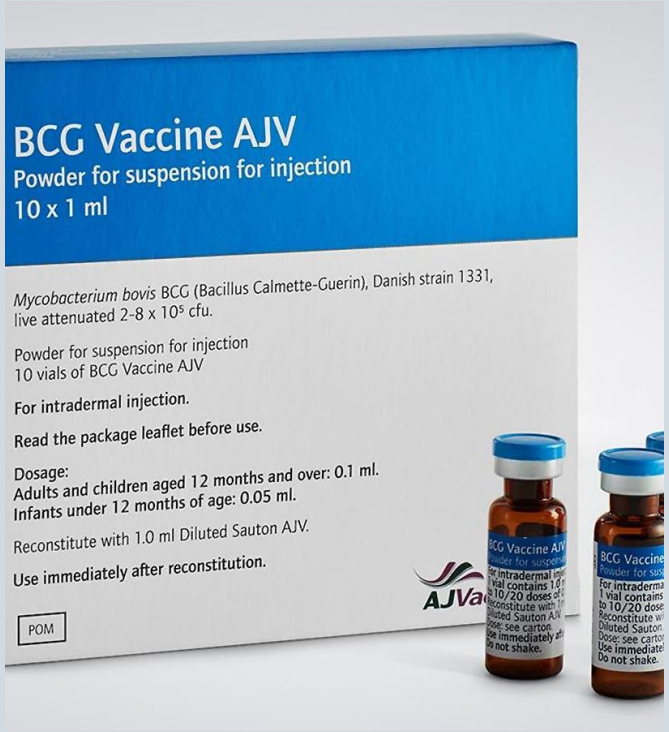
TB Vaccine (BCG)

- Bacille Calmette-Guérin (BCG) is a vaccine not widely used in the United States.
- Is often given to infants and small children in other countries where TB is common (i.e., India, Pakistan, the Congo, Bangladesh).

In the United States, BCG is only considered for people who meet specific criteria and in consultation with a TB expert.

- Children who are continually exposed and cannot be separated from adults who are untreated or ineffectively treated for TB or have Isoniazid and rifampin-resistant strains of TB.

- Health care workers can be considered on an individual basis.
  - Exposure to drug-resistant TB patients, exposure to ongoing transmission of drug-resistant TB, or in the event where comprehensive TB infection control precautions have not been successful.



School Exclusion

Per MDHHS:

- TB is a reportable Condition by Michigan State Law.
- Consult LHD to discuss the need for evaluation and testing of contacts.

Exclusions *(subject to LHD approval)*

- Exclude until medically cleared.

Resources

CDC - Tuberculosis (TB)

CDC - History of World TB Day

Control of Communicable Diseases Manual – 20th Edition- pages 637-648

MDHHS - Managing Communicable Diseases in Schools