Macon County
Public Health

# MACON COUNTY BOARD OF HEALTH
# MINUTES
# 8/26/2025

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| **Members:** | Garrett Higdon-Engineer/Chair, John Shearl-County Commissioner, Barry Breeden-County Commissioner/ Optometrist position, Dr. Roy Lenzo- Veterinarian, Cortney Patrick- Pharmacist, Dr. Matt Corbin- Dentist/Vice Chair, Angela Stone- Nurse Representative, Dr. Nathan Feibelman III- General Public, Steve Grissim- General Public, Vacant- Physician, Vacant- General Public |
| **Members Absent:** | None |
| **Staff Present:** | Kathy McGaha, Christina Stamey, Jimmy Villiard, and Dr. Allison Smith |
| **Guests:** | Warren Cabe-County Manager, Eric Ridenour-County Attorney |
| **Media:** | Shelby Powell (The Franklin Press), Bobby Coggins (Macon Media and News) |
| **Call to Order:** | Matt Corbin called the meeting to order at 6:15 p.m. |
| **Welcome/Intro/ Departures/ Recognition/ Announcements:** | Kathy McGaha opened the meeting welcoming new staff member, Makahla Chandler (Public Health Nurse 1). |
| **Public Comment:** | None |
| **Agenda Approval:** | Garrett Higdon made a motion to approve the agenda. Cortney Patrick seconded the motion. Motion passed unanimously. |
| 1. **Presentation:** | None |

2. **Approval of Previous Meeting Minutes:**

Minutes from 07/17/25 and 07/29/25 were presented for approval. Cortney Patrick made a motion to approve minutes from both meetings. Steve Grissim seconded the motion. Motion passed unanimously.

3. **Old Business:**

Approve Updated Meeting Schedule:

Steve Grissim made a motion to pass the updated meeting schedule dates that were voted for in the 07/29/25 Board of Health Meeting. Angie Stone seconded the motion. The motion passed unanimously.

Contact Information Update:

Kathy McGaha and Warren Cabe provided the board members with information on how to setup their emails provided by the county. Warren Cabe explained the county's email system, explaining the format and setup process.

Rabies Vaccine Program:

Jimmy Villiard introduced the certified rabies vaccinator program, explaining its purpose and requirements. Jimmy explained the details, training and certification process for rabies vaccinators, emphasizing the importance of oversight. Jimmy also went into depth about the historical context of the program in Macon County and the role of sponsoring organizations. Jimmy explained that CRV's can only vaccinate in the county where they are certified and that the certification is only valid for a year with the discretion on the Health Director, to extinguish at any time if needed. Roy Lenzo asked about any liability the county would assume. Kathy McGaha stated that at minimum a Memorandum of Agreement needed to be established to ensure proper oversight and liability management. Kathy McGaha was asked to call the State to do further research and for more questions to be answered.

4. **New Business:**

TB Update:

Dr. Allison Smith provided an update on an ongoing contact investigation related to a case of active pulmonary TB in Jackson County. Dr. Smith explained the state's guidelines and the screening process. Board members inquired about the treatment of the active TB case. Dr. Smith clarified that the health department is not managing the case, but working on contact tracing for members of Macon County that have been exposed. The original list to contact started at 74 and after investigation, approximately a dozen more were discovered. Dr. Smith praises the staff's efforts in the contact investigation.

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| Vote for Chair/ Vice Chair: | Kathy McGaha opens the floor for nominations for the Chair and Vice Chair positions. Matt Corbin made a motion to nominate Garrett Higdon as chair, explaining the decision and his willingness to serve. Barry Breeden seconds the motion, and the nomination is approved unanimously. Garrett Higdon, now residing as Chair, takes over the meeting. |
| **Closed Session:** (If necessary, according to N.C. Statute G.S. 143-318.11) | Garrett Higdon entertained a motion to go into closed session, inviting county attorney Eric Ridenour and county manager Warren Cabe into closed session at 6:44pm. Barry Breeden seconded the motion. The motion passed unanimously.<br><br>Angie Stone made a motion to come out of closed session at 9:33pm. Barry Breeden seconded the motion. The motion passed unanimously. |
| **Next Meeting Date:** | September 23, 2025 |
| **Adjournment:** | Angie Stone made a motion to adjourn at 9:34pm. Barry Breeden seconded the motion. The motion passed unanimously. |
| **Minutes Recorded by:** | Christina Stamey |

# Certified Rabies Vaccinator (CRV) Program – North Carolina

## Overview

North Carolina's Certified Rabies Vaccinator (CRV) Program (NCGS §130A-186) allows Local Health Directors (LHDs) to appoint trained individuals to administer rabies vaccines to dogs, cats, and ferrets in counties where veterinary access is limited.

Appointees complete required training, demonstrate competency, and receive certification from the State Public Health Veterinarian.

## Certification Process

- Recommendation & Appointment – Candidate must be recommended by the LHD to the Veterinary Public Health (VPH) program.
- Required Forms – Candidate completes the Memorandum of Understanding (MOU) and Vaccination Administration Training (VAT) Checklist.
- Web-Based Training – Four-module Wake AHEC webinar (rabies epidemiology, NC law, policies, vaccine administration). Must score ≥70% on post-test.
- Hands-On Training – Conducted by a licensed NC veterinarian, signed off with LHD.
- Certification Issued – VPH provides a certificate and registry number.

## Scope & Limitations

- CRVs may only vaccinate within the county of appointment.
- Vaccinations given by CRVs are valid for one year.
- Certification may be revoked at any time by the LHD.
- Transfer to another county requires approval from the new LHD.

## Macon County Public Health Context

Historical Sponsorship:
Macon County Public Health (MCPH) has historically only sponsored Certified Rabies Vaccinators through local animal shelters, not private individuals. This approach ensured clear oversight, accountability, and compliance with vaccine handling and reporting standards.

Revocation Policy:
When a CRV has left the sponsoring animal shelter, their CRV status has been revoked, since oversight and accountability could no longer be guaranteed.

Recent Request:
In a recent case, an individual sought reinstatement of their CRV status.
- Initial request: Made as a private individual (which conflicted with MCPH's oversight model).
- Resolution: The individual obtained sponsorship from an Animal Rescue organization, which will now provide day-to-day oversight and accountability. MCPH recognizes this as consistent with its established oversight practices.

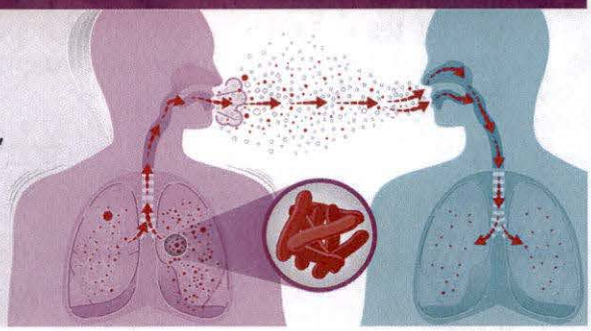
## Key Takeaways

- CRVs extend rabies vaccination capacity in underserved areas.
- In Macon County, sponsorship is required—traditionally through shelters, and now also through qualified rescue organizations.
- Oversight remains a critical safeguard, ensuring proper vaccine handling, record-keeping, and accountability.

# What You Need to Know About Tuberculosis

Tuberculosis (TB) is a disease caused by germs that are spread from person to person through the air. TB usually affects the lungs, but it can also affect other parts of the body, such as the brain, the kidneys, or the spine.

Not everyone infected with TB germs becomes sick. As a result, two TB-related conditions exist: latent TB infection (or inactive TB) and TB disease. If not treated properly, TB disease can be fatal.



## The Difference Between Inactive TB and Active TB Disease

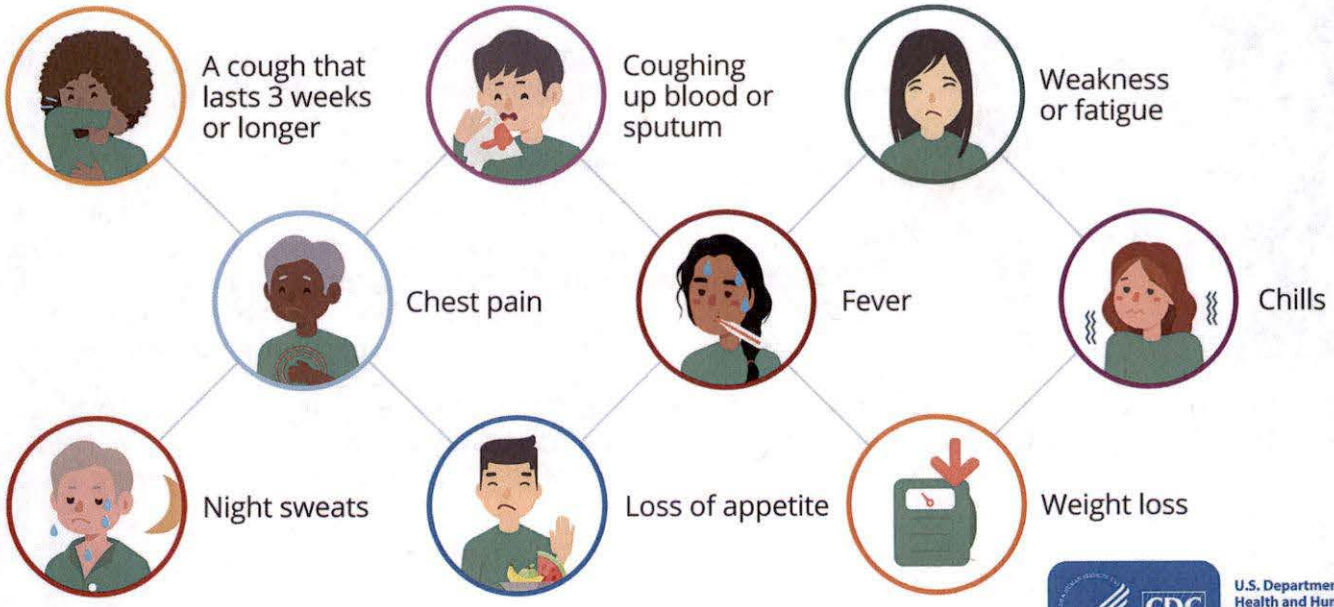
### A Person With Inactive TB

- Has a small amount of TB germs in their body that are alive but inactive.
- Has no symptoms and does not feel sick.
- Cannot spread TB germs to others.
- Usually has a positive TB blood test or TB skin test indicating TB infection.
- Has a normal chest x-ray and a negative sputum smear.
- Needs treatment for inactive TB to prevent active TB disease.

### A Person With Active TB Disease

- Has a large amount of active TB germs in their body.
- Has symptoms and feels sick.
- May spread TB germs to others.
- Usually has a positive TB blood test or TB skin test indicating TB infection.
- May have an abnormal chest x-ray, or positive sputum smear or culture.
- Needs treatment for active TB disease.

## If your body cannot stop TB germs from growing, you develop active TB disease. Symptoms of active TB disease include:




U.S. Department of Health and Human Services
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## Testing for TB

Getting tested and treated for TB can protect yourself, your family and friends, and your community. There are two types of tests for TB infection: the **TB blood test** and the **TB skin test**.

### A Positive Test For TB Infection

You have TB germs in your body. Your doctor will do other tests to determine if you have inactive TB or active TB disease. These tests may include a chest x-ray, and a test of the sputum you cough up.

### A Negative Test For TB Infection

A negative test means you likely do not have inactive TB or active TB disease.

**Your doctor may do more tests if:**

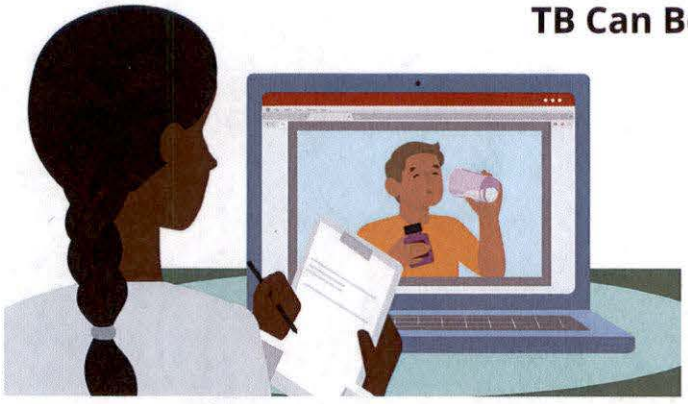
- You have symptoms of active TB disease, like coughing, chest pain, fever, weight loss, or tiredness.
- You have HIV infection.
- Your exposure to TB germs was recent.

### Tell Your Doctor if You Received a TB Vaccine


TB blood tests are the preferred test for people who have received the bacille Calmette-Guérin (BCG) TB vaccine. Unlike the TB skin test, TB blood tests are not affected by BCG vaccination.

Many people born outside of the United States have received the BCG TB vaccine. BCG vaccination does not completely prevent people from getting TB. A positive reaction to a TB skin test may be due to the BCG vaccine itself or due to infection with TB germs.

## TB Can Be Treated

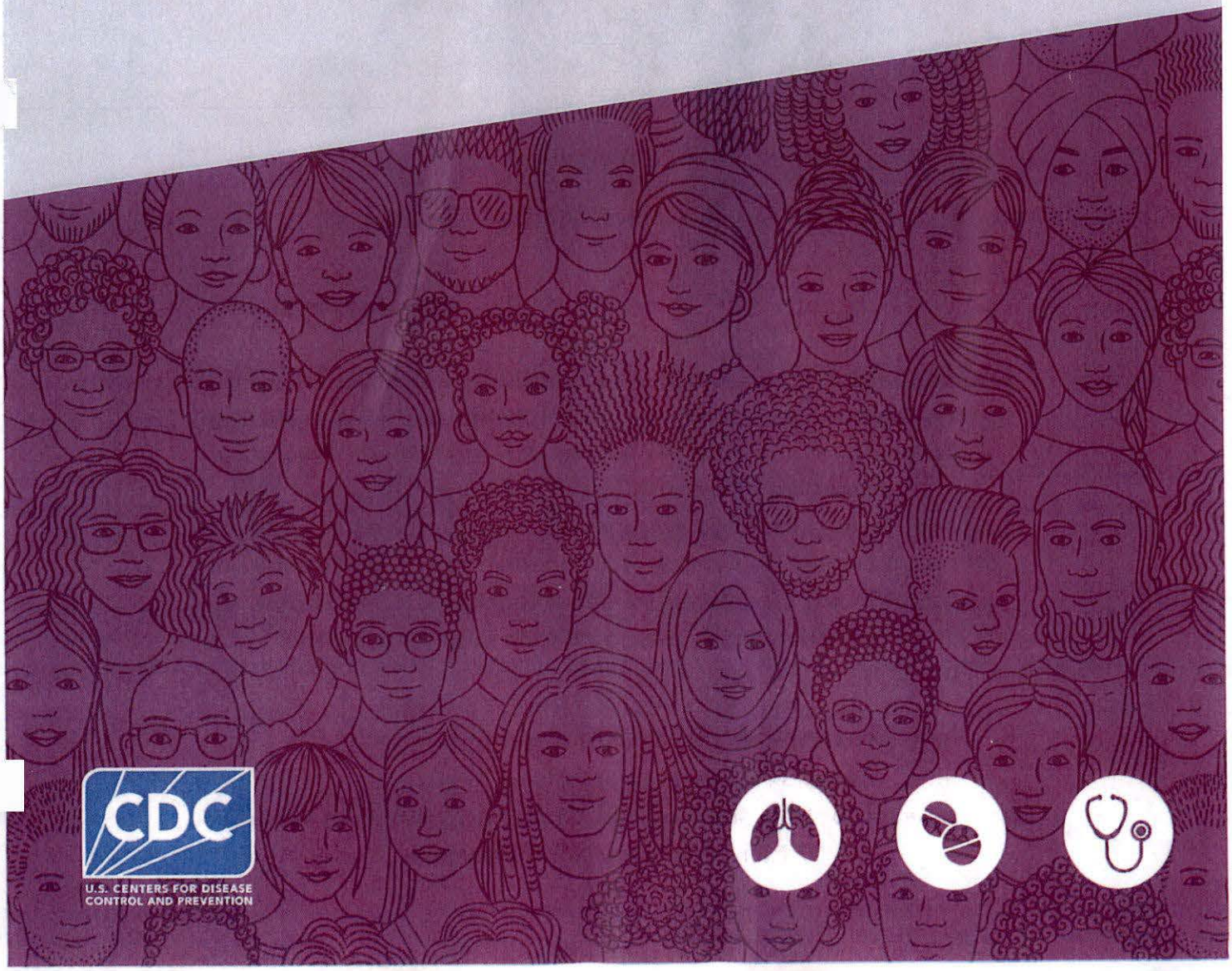


TB germs can live in your body for years without causing symptoms. If you have inactive TB, treating it is the best way to protect you from getting sick with active TB disease.

If you have been diagnosed with active TB disease, you can be treated with medicine. You will need to take and finish all of your TB medicine as directed by your doctor or nurse. This is to help you feel better and prevent other people from getting sick.

The best way to remember to take your medicines for active TB disease is by receiving directly observed therapy (DOT). Through DOT, you will meet with a health care worker every day or several times a week either in-person or virtually. The health care worker will make sure that the TB medicines are working as they should.

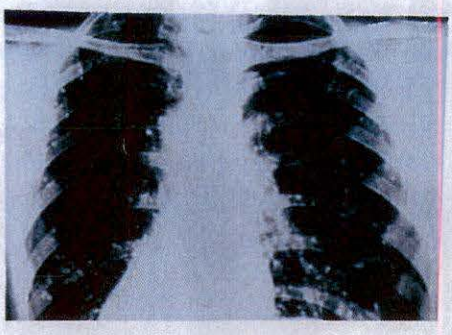
# QUESTIONS & ANSWERS ABOUT TUBERCULOSIS



CDC
U.S. CENTERS FOR DISEASE CONTROL AND PREVENTION

# QUESTIONS & ANSWERS ABOUT TUBERCULOSIS

2025



Questions and Answers About Tuberculosis (TB) provides information on the diagnosis and treatment of TB infection and TB disease. Key audiences for this booklet are people with or at risk for TB; people who may have been exposed to someone with TB; people who provide services for those at higher risk for TB, such as correctional officers, homeless shelter workers, and emergency responders; and people who want to learn more about tuberculosis. For additional information on TB, please visit the CDC TB website.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for HIV, Viral Hepatitis, STD, and Tuberculosis Prevention
Division of Tuberculosis Elimination

# TABLE OF CONTENTS

## What is TB?

Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis (M. tuberculosis)*. The bacteria, or germs, usually affect the lungs. TB germs can affect any part of the body, such as the kidneys, spine, or brain.

There is good news. People with TB can be treated if they seek medical help.

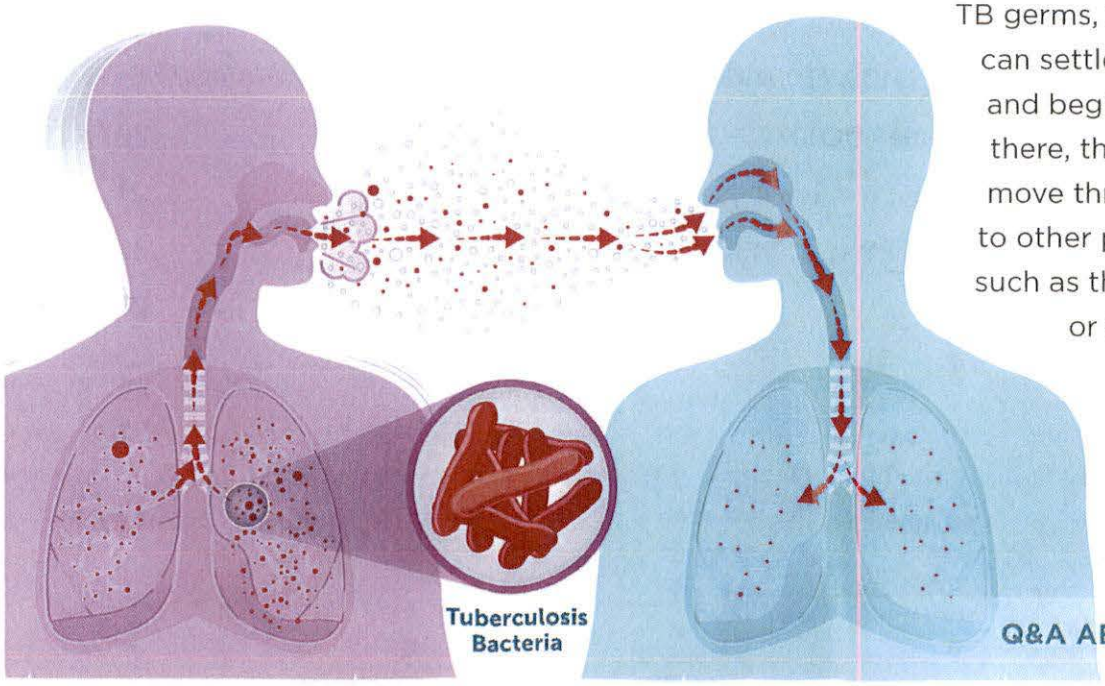
## Why is TB still a problem in the United States?

TB is preventable and treatable but remains one of the world's leading infectious disease killers. Having infectious TB disease means that you can spread TB germs to others. The United States continues to maintain one of the lowest TB incidence rates in the world. However, TB still impacts thousands of lives in the nation and millions globally. In the United States, TB rates are still higher among persons in racial and ethnic minority groups. This is because certain racial and ethnic groups are more likely to have TB risk factors that can increase the chance of developing the disease (see page 7).

This booklet answers common questions about TB. Please ask your doctor, nurse, or other health care provider if you have additional questions.

## How is TB spread?

TB is spread through the air from one person to another. The TB germs are spread into the air when a person with infectious TB disease of the lungs or throat coughs, speaks, or sings. People nearby may breathe in these TB germs and become infected.




When a person breathes in TB germs, the TB germs can settle in the lungs and begin to grow. From there, the TB germs can move through the blood to other parts of the body, such as the kidney, spine, or brain.

## Who is at risk for getting TB?

Anyone can get TB. Some people have a higher risk of getting infected with TB:

- People who have contact with someone who has infectious TB disease
- People who were born in or who frequently travel to countries where TB is common, such as some countries in Asia, Africa, and Latin America
- Health care workers and others who work or live in places at higher risk for TB transmission, such as homeless shelters, jails, and nursing homes

## What is latent TB infection (LTBI)?

In most people who breathe in TB germs and become infected, the body is able to fight the TB germs to stop them from growing. The TB germs become inactive, but they remain alive in the body and can become active later. This is called latent TB infection, or LTBI for short.

People with LTBI

- Have no symptoms.
- Don't feel sick.
- Can't spread TB germs to others.
- Will usually have a positive TB blood test or positive TB skin test reaction.
- May develop TB disease if they do not receive treatment for LTBI (see page 13).

People with LTBI do not have symptoms, and they cannot spread TB germs to others. However, if TB germs become active in the body and multiply, the person will go from having LTBI to being sick with TB disease. For this reason, people with LTBI should be treated to prevent them from developing TB disease. Treatment of LTBI is essential to controlling TB in the United States because it substantially reduces the risk that LTBI will progress to TB disease.

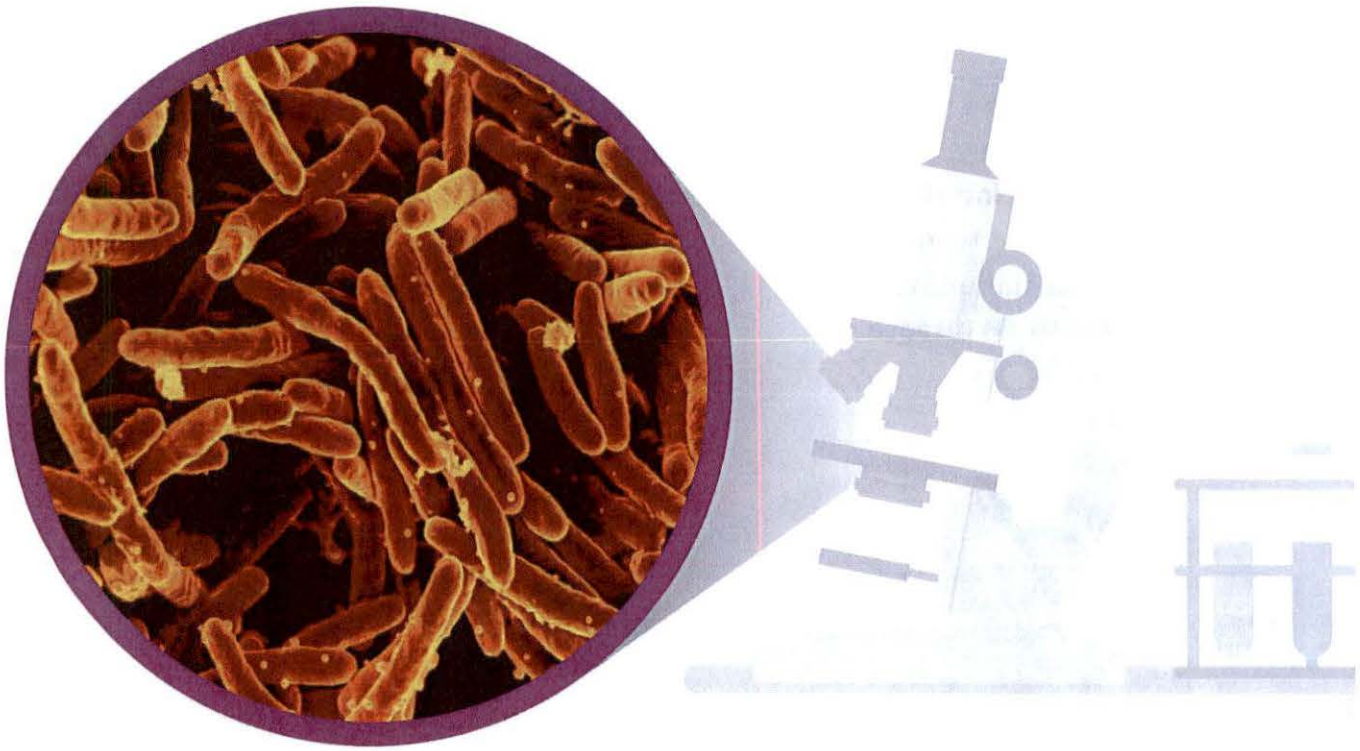
## What is TB disease?

If the immune system can't stop TB germs from growing, the TB germs begin to multiply in the body and cause TB disease. The TB germs affect the body, and if this occurs in the lungs, the TB germs can create a hole in the lung. Some people develop TB disease soon after becoming infected (within weeks) before their immune system can fight the TB germs. Other people have latent TB infection and may get sick years later, when their immune system becomes weak for another reason. Treating latent TB infection (LTBI) is effective in preventing TB disease.

People with TB disease in the lungs or throat can be infectious, meaning that they can pass TB germs to their family, friends, and others around them. People with TB in other parts of their bodies, such as the kidneys or spine, are usually not infectious.

People with TB disease are most likely to spread TB germs to people they spend time with every day. This includes family members, friends, coworkers, or schoolmates.

People with TB disease need to take several medicines when they start treatment. After taking TB medicine for several weeks, a doctor will be able to tell TB patients when they are no longer able to spread TB germs to others. Most people with TB disease will need to take TB medicine for at least 4 months to be cured.



## Who is at risk for TB disease?

Many people who have latent TB infection (LTBI) never develop TB disease. While not everyone with LTBI will develop TB disease, about 5–10% will develop TB disease over their lifetimes if not treated. More than 80% of people who get sick with active TB disease in the United States each year get sick from untreated inactive TB. Some people who have LTBI are more likely to develop TB disease than others. People at higher risk for developing TB disease generally fall into two categories:

1. Those who have been recently infected with TB germs
2. Those with medical conditions that weaken the immune system including:


**HIV**


**Substance use (such as injection drug use)**


**Specialized treatment for rheumatoid arthritis or Crohn's disease**


**Organ transplants**


**Severe kidney disease**


**Head and neck cancer**


**Diabetes**


**Medical treatments such as corticosteroids**


**Silicosis**


**Low body weight**

Children, especially those under age 5, have a higher risk of developing TB disease once infected.

## What are the symptoms of TB disease?

Symptoms of TB disease depend on where in the body the TB germs are growing. TB disease in the lungs may cause the following symptoms:

**Cough** (lasting longer than 3 weeks)

**Coughing up blood or sputum** (phlegm from inside the lungs)

**Chest pain**

**Fever**

**Night sweats**

**Chills**

**Loss of appetite**

**Weakness or fatigue**

**Weight loss**

Symptoms of TB disease in other parts of the body may include the following:

- TB of the kidney may cause blood in the urine.
- TB meningitis may cause headache or confusion.
- TB of the spine may cause back pain.
- TB of the larynx may cause hoarseness.

For information on how TB disease is treated, see page 17.

## What is the difference between latent TB infection (LTBI) and TB disease?

There are important differences between latent TB infection (LTBI) and TB disease. Knowing the differences can help you understand what to expect if you have LTBI or TB disease. The table below explains these key differences side by side.

|  A Person with Latent TB Infection (LTBI) |  A Person with TB Disease |
|---|---|
| Has a small amount of TB germs in their body that are alive but inactive | Has a large amount of active TB germs in their body |
| Has no symptoms | Has symptoms that may include<br>» a bad cough that lasts 3 weeks or longer<br>» pain in the chest<br>» coughing up blood or sputum<br>» weakness or fatigue<br>» weight loss<br>» no appetite<br>» chills<br>» fever<br>» sweating at night |
| Cannot spread TB germs to others | May spread TB germs to others |
| Does not feel sick | May feel sick and may have symptoms such as a cough, fever, and/or weight loss |
| Usually has a positive TB skin test or TB blood test indicating TB infection | Usually has a positive TB skin test or TB blood test indicating TB infection |
| Has a normal chest x-ray and a negative sputum smear | May have an abnormal chest x-ray, or positive sputum smear or culture |
| Should consider treatment for LTBI to prevent TB disease | Needs treatment for TB disease |

## Should I get tested for TB?

You should get tested for TB if:

- You have spent time with a person known or thought to have infectious TB disease.
- You were born in or frequently travel to countries where TB is common, such as some countries in Asia, Africa, and Latin America.
- You currently live, used to live, or are employed in a large group setting where TB is more common, such as a homeless shelter, prison, jail, or nursing home.
- You are a health care worker who cares for patients with TB disease.
- You are part of a population that is more likely to have latent TB infection (LTBI) or TB disease, including people who don't have good access to health care, have lower income, or misuse drugs or alcohol.

In addition, children, especially those under 5, have a higher risk of developing TB disease once infected. Therefore, testing for TB infection in children who may have been exposed to a person with TB disease is important.

## What are the tests for TB infection?

There are two types of tests for TB infection: the TB blood test and the TB skin test. Your health care provider should choose which TB test to use. Factors in selecting which test to use include the reason for testing, test availability, and cost. Health care providers are encouraged to use newer TB blood tests to screen for TB infection. Generally, it is not necessary to use both a TB skin test and a TB blood test to test the same person.

### *TB Blood Tests*

TB blood tests use a blood sample to find out if you are infected with TB germs. Two TB blood tests are approved by the U.S. Food and Drug Administration and are available in the United States:

- QuantiFERON®-TB Gold Plus (QFT-Plus)
- T-SPOT®.*TB* test (T-Spot)

You can get a TB blood test at the health department or at your doctor's office. The health care provider will draw your blood and send it to a laboratory for analysis and results. If your health department uses a TB blood test, only one visit is required to draw blood for the test.

**Positive TB blood test:** This means that you have been infected with TB germs. Additional tests are necessary to determine whether you have latent TB infect (LTBI) or TB disease.

**Negative TB blood test:** This means that your blood did not react to the test and that you likely do not have TB infection.

TB blood tests are the recommended TB test for:

- People who have received the bacille Calmette-Guérin (BCG) TB vaccine.
- People who have a difficult time returning for a second appointment to look for a reaction to the TB skin test.

## *TB Skin Test*

The TB skin test may be used to find out if you are infected with TB germs. You can get a skin test at the health department or at your doctor's office. A health care worker will inject a small amount of testing fluid (called tuberculin or PPD) into the skin on the lower part of your arm. After 2 or 3 days, you must return to have your skin test read by the health care worker. You may have swelling where the tuberculin was injected. The health care worker will measure this swelling and tell you if your reaction to the test is positive or negative.

**Positive skin test:** This means the person's body is infected with TB germs. Additional tests are needed to determine if the person has LTBI or TB disease.

**Negative skin test:** This means the person's body did not react to the test, and that LTBI or TB disease is not likely.

If your exposure to TB germs was recent, your TB skin test reaction may not be positive yet. You may need a second skin test 8 to 10 weeks after the last time you spent time with the person with TB disease. This is because it can take several weeks after infection for your immune system to react to the TB skin test. If your reaction to the second test is negative, you probably do not have TB infection.

## What if I have a positive test for TB infection?

If you have a positive reaction to the TB blood test or TB skin test, your doctor or nurse will do other tests to see if you have TB disease. These tests usually include a chest x-ray. They may also include a test of the sputum you cough up. Because TB germs may be found somewhere other than your lungs, your doctor or nurse may check your urine, take tissue samples, or do other tests. Without treatment, latent TB infection (LTBI) can progress to TB disease. If you have LTBI, you should be treated to prevent TB disease (see page 13). If you have TB disease, you will need to take medicine to treat the disease (see page 17).

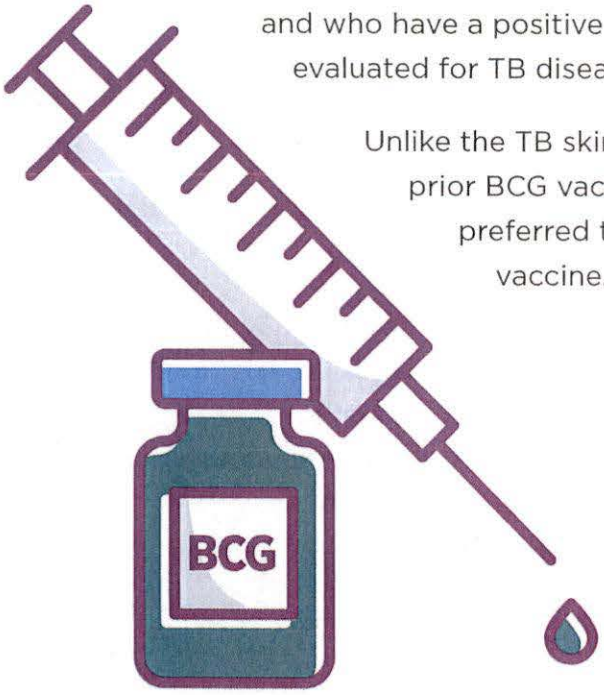
## What if I have been vaccinated with bacille Calmette-Guérin (BCG)?

BCG is a vaccine for TB. This vaccine is not widely used in the United States. Many people born outside of the United States have received the BCG TB vaccine.

It is often given to infants and small children in other countries where TB is more common. It protects children in those countries from getting severe forms of TB disease, such as TB meningitis. The BCG TB vaccine is not thought to protect people from getting TB disease in the lungs, which is the most common form of disease in the United States.

In some people, BCG TB vaccine may cause a positive TB skin test when they are not infected with TB germs. However, there is no way to know if a positive skin test reaction is caused by BCG vaccination or caused by true TB infection. When using the skin test, people who have been vaccinated with BCG and who have a positive skin test reaction should always be further evaluated for TB disease as if they were not vaccinated with BCG.

Unlike the TB skin test, TB blood tests are not affected by prior BCG vaccination. Therefore, TB blood tests are the preferred test for people who have received the BCG vaccine.



## If I have latent TB infection (LTBI), how can I avoid developing TB disease?

Without treatment, latent TB infection (LTBI) can progress to TB disease. If you have LTBI, you should be treated to prevent TB disease even if you do not feel sick. Treatment of LTBI is essential to preventing TB because it substantially reduces the risk that LTBI will progress to TB disease.

Treating LTBI is effective in preventing TB disease. There are several options for the treatment of LTBI. There have been advances in shortening the length of LTBI treatment from 6–9 months to 3–4 months. Short-course LTBI treatments are effective, are safe, and have higher completion rates than longer treatments.

If you have LTBI and are at higher risk for developing TB disease (see page 7), it is even more urgent that you take medicine, so you don't develop TB disease. The following TB medications are used on their own or in combination to treat LTBI:




CDC and the National Tuberculosis Controllers Association recommend one of the following treatment options for LTBI:

- Three months of once-weekly isoniazid plus rifapentine (3HP)
- Four months of daily rifampin (4R)
- Three months of daily isoniazid plus rifampin (3HR)

If none of the treatment regimens above is an option for you, there are alternative effective LTBI treatment regimens which include 6 or 9 months of isoniazid. When taking isoniazid, your doctor may have you take vitamin B6 with your medication. Your doctor will be able to determine which treatment option is best for your situation. Your treatment may have to be modified if you have had contact with someone whose TB disease is caused by germs that are resistant to isoniazid or rifampin, two of the most important medicines for treating LTBI and TB disease. This means that those medicines can no longer kill the TB germs.

Sometimes people are given treatment for LTBI even if their TB blood test result or TB skin test reaction is negative. This is often done with infants, children, and people with HIV who have recently spent time with someone with TB disease. This is because these groups are at very high risk of developing TB disease soon after they become infected with TB germs.

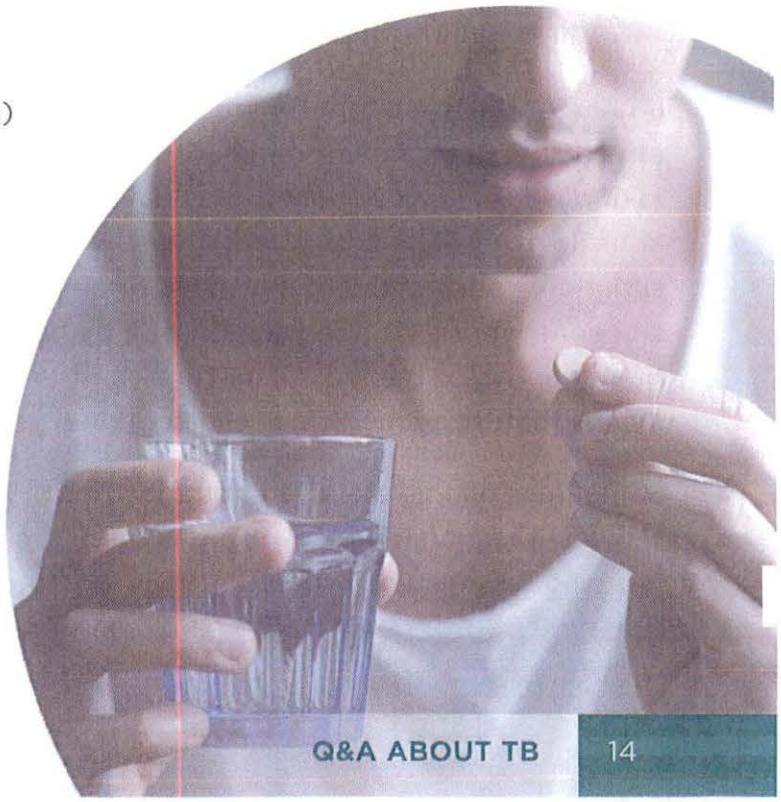
If you start taking treatment for LTBI, you will need to see your doctor or nurse on a regular schedule. It is important that you take all the medicine as prescribed. The doctor or nurse will check on how you are doing.

## What are the side effects of medicines to treat latent TB infection (LTBI)?

Most people can take their latent TB infection (LTBI) medicines without any problems; however, sometimes there are side effects. Some side effects are minor problems. For example, the rifampin or rifapentine medicine may cause orange discoloration of body fluids such as urine (pee), saliva, tears, or sweat, and breast milk. Orange discoloration of body fluids is expected and harmless. This is normal and the color may fade over time. The doctor or nurse may advise you not to wear soft contact lenses because they may get permanently stained. If you have any of these side effects, you can continue taking your medicine.

If you have a serious side effect, **call your doctor or nurse immediately**. You may be told to stop taking your LTBI medicines or to return to the clinic for tests. Serious side effects include:

- Dizziness or lightheadedness
- Loss of appetite
- Flu-like symptoms
- Severe diarrhea or light-colored stools
- Shortness of breath
- Feelings of sadness or depression
- Fever
- Unexplained weight loss
- Brown urine (color of coffee or cola)
- Yellowish skin or eyes
- Rash
- Persistent tingling or prickling sensation of hands and feet
- Persistent tiredness or weakness lasting 3 or more days
- Stomach pain
- Easy bruising or bleeding
- Joint pain
- Nausea
- Vomiting



You should provide a list of current medicines you are taking to your health care provider to avoid drug interactions. Some oral contraceptives (birth control pills) may not work as well when you take them with TB medicines. This is because the TB medicines can sometimes interfere with birth control pills and possibly make the birth control pills less effective. If you are using birth control pills, talk with your doctor before beginning any new medicines. More information on side effects from TB medicine can be found at CDC's TB webpage: Adverse Events During Treatment.

**Warning:** Drinking alcoholic beverages, such as wine, beer, or liquor, while taking TB medicines can be dangerous. Check with your doctor or nurse for more information.

Everyone who has LTBI needs to know the symptoms of TB disease (see page 8). If you develop symptoms of TB disease, you should see a doctor right away.

People sometimes need help managing the LTBI medicine they must take. The CDC has developed LTBI medicine trackers to help patients organize and manage their LTBI medicine. On these medicine trackers, there is space to write treatment schedules, medication intake, and doctor/clinic contact information. There is also a checklist of signs and symptoms that may develop while taking LTBI medicine.

The three medicine trackers include:

1. 12-Dose (also known as 3HP) Regimen for Latent TB Infection- Medication Tracker and Symptom Checklist
2. 4 Months Daily Rifampin (4R) Regimen for Latent TB Infection Medication Tracker and Symptom Checklist
3. 3 Months of Daily Isoniazid plus Rifampin (3HR) Regimen for Latent TB Infection Medication Tracker and Symptom Checklist

The medicine trackers are available in English and other languages. To download or print these materials, visit the CDC's TB webpage: General Public Communication and Education Resources.

To learn more about LTBI, visit these CDC webpages:

» Treatment Regimens for Latent TB Infection

» Deciding When to Treat Latent TB Infection

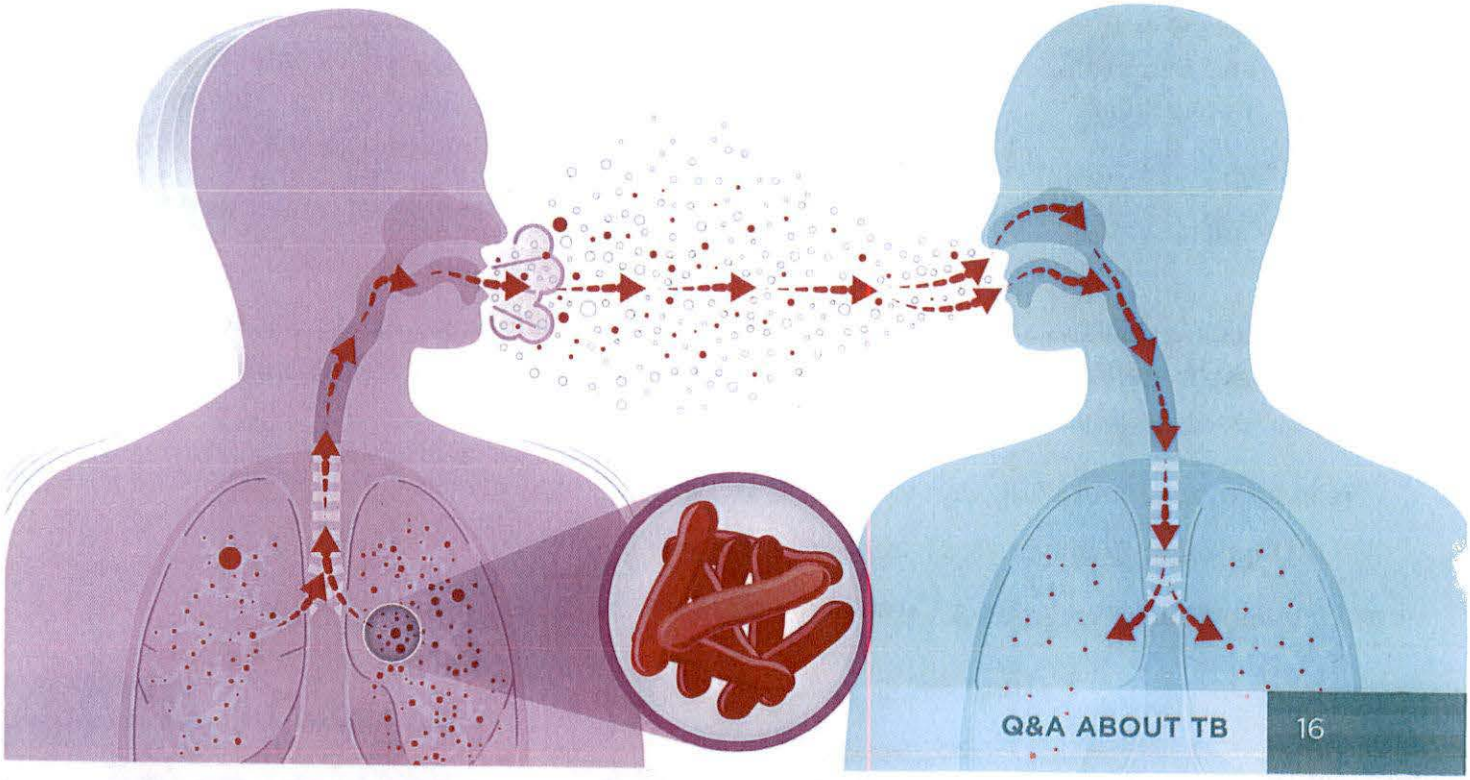
## What if I have HIV?

If you have HIV and latent TB infection (LTBI), you need treatment as soon as possible to prevent TB disease. A person with HIV who also has untreated LTBI is much more likely to develop TB disease during their lifetime than someone without HIV. Among people with LTBI, HIV is the strongest known risk factor for progressing to TB disease. All people with HIV should be tested to find out if they have LTBI and promptly seek treatment if necessary. There are several effective LTBI treatment regimens available for people with HIV.

## If I was exposed to someone with TB disease, can I give TB to others?

If you were exposed to someone with TB disease, you may become infected with TB bacteria, but you would not be able to spread the bacteria to others right away. Only people with infectious TB disease can spread TB germs to others. Before you would be able to spread TB germs to others, you would have to breathe in TB germs and become infected. Then the germs would have to multiply in your body and cause infectious TB disease. At this point, you could possibly spread TB germs to others.

In most people who breathe in TB germs and become infected, the body can fight the germs to stop them from growing. The germs become inactive, but they remain alive in the body and can become active later. This is called latent TB infection (LTBI). People with LTBI cannot spread TB germs to others. People who have LTBI can be treated to prevent TB disease.



## How is TB disease treated?

There is good news for people with TB disease! It can almost always be treated and cured with medicine. But the medicine must be taken as directed by your doctor or nurse.

If you have TB disease, you will need to take several different TB medicines. This is because there are many TB germs to be killed. Taking several TB medicines will do a better job of killing all the TB germs and preventing them from becoming resistant to the medicines. "Resistant" means that the medicine can no longer kill the TB bacteria.

Treatment for active TB disease can take four, six, or nine months depending on the treatment plan.


The treatment plans for active TB disease use different combinations of medicines that may include:

- Ethambutol (E)
- Isoniazid (H)
- Moxifloxacin (M)
- Rifampin (R)
- Rifapentine (P)
- Pyrazinamide (Z)

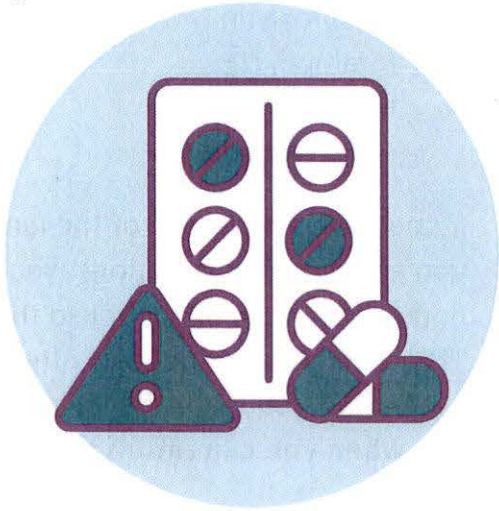
If you have TB disease of the lungs or throat, you are probably infectious. You need to stay home from work or school so that you don't spread TB germs to other people. After taking your medicine for a few weeks, you will feel better and you might no longer be infectious to others. **Your doctor or nurse will tell you when you can return to work or school or visit with friends.**

Having TB disease should not stop you from leading a normal life. People who are no longer infectious or feeling sick are often able to do the same things they did before they had TB disease. If you take your medicines as directed by your doctor or nurse, they should kill all the TB germs. This will keep you from becoming sick again.

## What are the side effects of TB disease medicines?

If you are taking medicines for TB disease, you should take them as directed by your doctor or nurse. The TB medicines may cause side effects. Some side effects are minor problems. Others are more serious. If you have a serious side effect, **call your doctor or nurse immediately**. You may be told to stop taking your TB medicines or to return to the clinic for tests. **Serious** side effects include:

- Skin rash
- Blurred or changed vision
- Stomach pain
- Brown urine or light-colored stool
- Tiredness
- Fever for 3 or more days
- Flu-like symptoms
- Lack of appetite
- Nausea
- Vomiting
- Yellowish skin or eyes
- Dizziness
- Tingling or numbness around the mouth
- Persistent tingling sensation in the hands and feet
- Stomach upset
- Joint aches
- Easy bruising or bleeding



Some side effects are **minor** problems. For example, rifampin may cause orange discoloration of body fluids such as urine (pee), saliva, tears, or sweat, and breast milk. Orange discoloration of body fluids is expected and harmless. This is normal and the color may fade over time. The doctor or nurse may advise you not to wear soft contact lenses because lenses may get permanently stained. If you have any of these side effects, you can continue taking your medicine.

Medicine that is prescribed to treat TB disease may interact with other drugs. You should provide a list of current medicines you are taking to your health care provider to avoid drug interactions.

For example, medicine for TB disease can interact with oral contraceptives (birth control pills) and possibly make the birth control pills less effective. If you are using birth control pills, ask your doctor about alternative birth control while you are taking TB medicines. If you are taking methadone (used to treat drug addiction) during TB treatment, you may have withdrawal symptoms. Your doctor or nurse may need to adjust your methadone dosage.

More information on side effects from TB medicine can be found at CDC's TB webpage: Adverse Events During Treatment.

## Why do I need to take TB medicines for so long?

TB germs die very slowly. For the treatment of latent TB infection (LTBI), it takes at least 3 months (and possibly longer depending on which medications you are on) to kill the TB germs.

For TB disease, it usually takes 4 months or longer for the medicines to kill all the TB germs. You will probably start feeling well after only a few weeks of treatment, but beware! The TB germs are still alive in your body, even if you feel better. You must continue to take your medicines until all the TB germs are dead, even though you may feel better and have no more symptoms of TB disease.

It can be very dangerous to stop taking your medicines or not to take all your medicines regularly. The TB germs will grow again, and you will remain sick for a longer time. The TB germs may also become resistant to the medicines you are taking. You may need new different medicines to kill the TB germs if the old medicines no longer work. These new medicines must be taken for a longer time and usually have more serious side effects.

If you become infectious again, you could give TB germs to your family, friends, or anyone else who spends time with you. It is **very important** to take all your medicines as directed by your doctor or nurse.

## What are multidrug-resistant TB (MDR TB) and extensively drug-resistant TB (XDR TB)?

Sometimes the TB germs are resistant to the medicines used to treat TB disease. This means that the medicine can no longer kill the TB germs.

Multidrug-resistant TB (MDR TB) is caused by TB germs that are resistant to at least two of the most important TB medicines: isoniazid and rifampin.

A more serious form of MDR TB is called extensively drug-resistant TB (XDR TB). XDR TB is a rare type of TB that is resistant to nearly all medicines used to treat TB disease.

If you do not take your medicines as directed by your doctor or nurse, the TB germs may become resistant to certain medicines. Also, people who have spent time with someone who is sick with MDR TB or XDR TB can become infected with these multidrug-resistant TB germs.

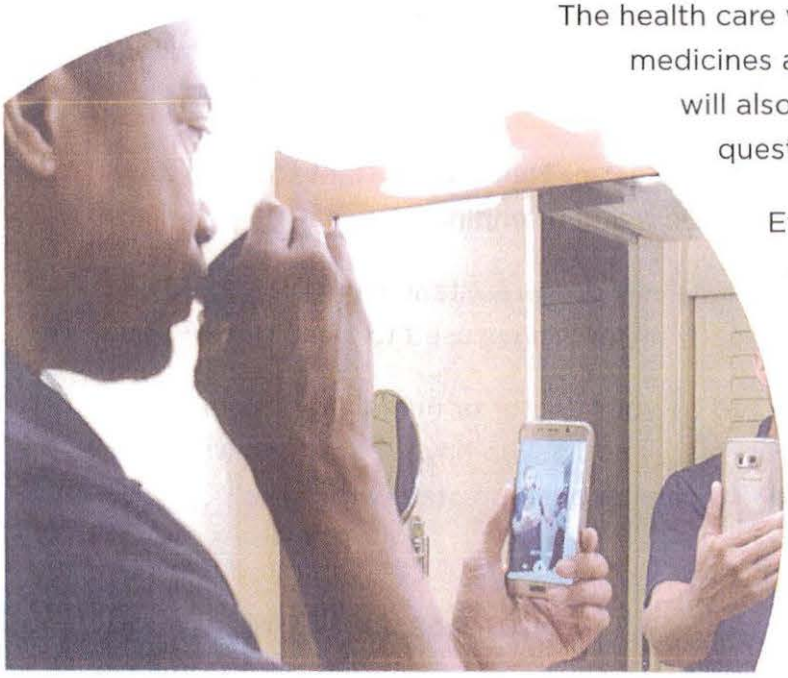
Drug-resistant TB is more common in people who

- Have spent time with someone with drug-resistant TB disease.
- Do not take all their medicines as directed by their doctor or nurse.
- Develop TB disease again after having taken TB medicines in the past.
- Come from areas where drug-resistant TB is common.

People with MDR TB or XDR TB must be treated with special medicines. Treatment takes much longer than for regular TB and the medicines may cause more side effects. People with MDR TB or XDR TB are at greater risk of dying from the disease. People with MDR TB or XDR TB must see a TB expert who can closely observe their treatment to make sure it is working.

## What is directly observed therapy (DOT)?

The best way to remember to take your medicines is to get directly observed therapy (DOT); this is especially true for treatment of TB disease. If you get DOT, you will meet with a health care worker every day or several times a week. You will meet at a place you both agree on, or by electronic methods. Meeting in person can be at the TB clinic, your home or work, or any other convenient location. You will take your medicines at this place while the health care worker watches. Some TB programs now use electronic methods of DOT for both TB disease and latent TB infection (LTBI). Electronic DOT (eDOT) is an alternative to in-person DOT. If eDOT is available in your area and you qualify for eDOT, a health care worker will watch you take your TB medication remotely over a smartphone or other video-capable electronic device. DOT, whether in-person or using an electronic device, helps you remember to take your medicines and complete your treatment. This means you will get well as soon as possible.



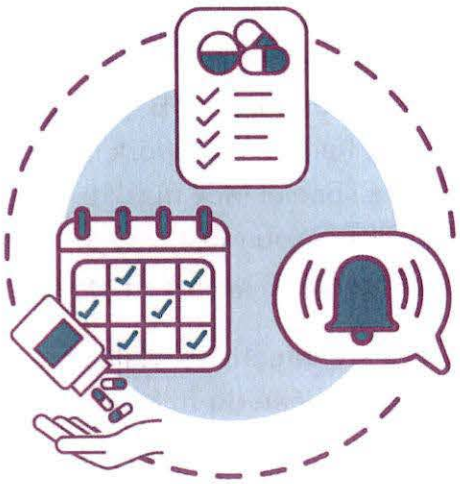
The health care worker will also make sure that the TB medicines are working as they should. This person will also watch for side effects and answer any questions you have about TB.

Even if you are not getting DOT, you must be checked regularly by your doctor or nurse at different times during your treatment to make sure everything is going well. This will continue until you are cured.

## How can I remember to take my TB medicines if I am not on DOT?

The only way to get well is to take your TB medicines exactly as directed by your doctor or nurse. This may not be easy! If you have LTBI, you will be taking your LTBI medicines for 3 months or longer. If you have TB disease, you will generally be taking medicine for 4 months or longer.

Getting into a routine can help you remember to take your TB medicine as directed. Here are some ways to help you remember to take your medicines whether you are on LTBI medicine or TB disease medicine:



- Take your pills at the same time every day—for example, you can take them before eating breakfast, during a regular coffee break, or after brushing your teeth.
- Ask a family member or a friend to remind you to take your pills.
- Mark off each day on a calendar as you take your pills.
- Put your pills in a weekly pill dispenser that you keep by your bed or in your purse or pocket.
- Use a medicine tracker to organize and manage your pills. The CDC website has printable LTBI medicine trackers available. On the LTBI medicine trackers, there is space to write your treatment schedule, number of pills to be taken per week, and doctor/clinic contact information. To download or print the medicine trackers, visit the CDC's TB webpage: General Public Communication and Education Resources.

**NOTE: Remember to keep all medicine out of reach of children.**

If you forget to take your pills one day, skip that dose and take the next scheduled dose. Tell your doctor or nurse that you missed a dose. You may also call your doctor or nurse for instructions.

## How can I keep from spreading TB?

The most important way to keep from spreading TB germs is for people with infectious TB disease to take all medicines exactly as directed by a doctor or nurse. You also need to keep all your clinic appointments. Your doctor or nurse needs to see how you are doing. This often requires another chest x-ray or a test of your sputum (phlegm that is coughed up from deep in the lungs). These tests will show whether the medicines are working. Tests also help to show whether you can still spread TB germs to others. Be sure to tell your health care provider about anything you think is wrong.

If you are sick enough with TB disease to go to a hospital, you may be put in a special room. These rooms use air vents that keep TB germs from spreading to other rooms. People who work in these special rooms must wear a special face mask to protect themselves from TB germs. You must stay in the room so that you will not spread TB germs to other people.

If you are infectious while you are at home, there are things you can do to protect others near you:

- Take your medicines as directed. This is very important!
- Always cover your mouth with a tissue when you cough, sneeze, or laugh. Put the tissue in a closed bag and throw it away.
- Separate yourself from others and avoid close contact with anyone. Sleep in a bedroom away from other family members. Avoid having visitors in the home.
- Do not go to work or school.
- Air out your room often to the outside of the building (if it is not too cold outside). TB spreads in small closed spaces where air doesn't move. Put a fan in your window to blow out (exhaust) air that may be filled with TB germs. If you have other windows in the closed room, open them too so that the fan can pull in fresh air. This will reduce the chances that TB germs will stay in the room and infect someone who breathes the air.

Remember, TB is spread through the air. People cannot get infected with TB germs through

handshakes, sitting on toilet seats, or sharing dishes and utensils with someone who has TB.

After you take the medicines for about 2 or 3 weeks, you might no longer be able to spread TB germs to others. **Your doctor or nurse will tell you when you can return to work or school or visit with friends.**

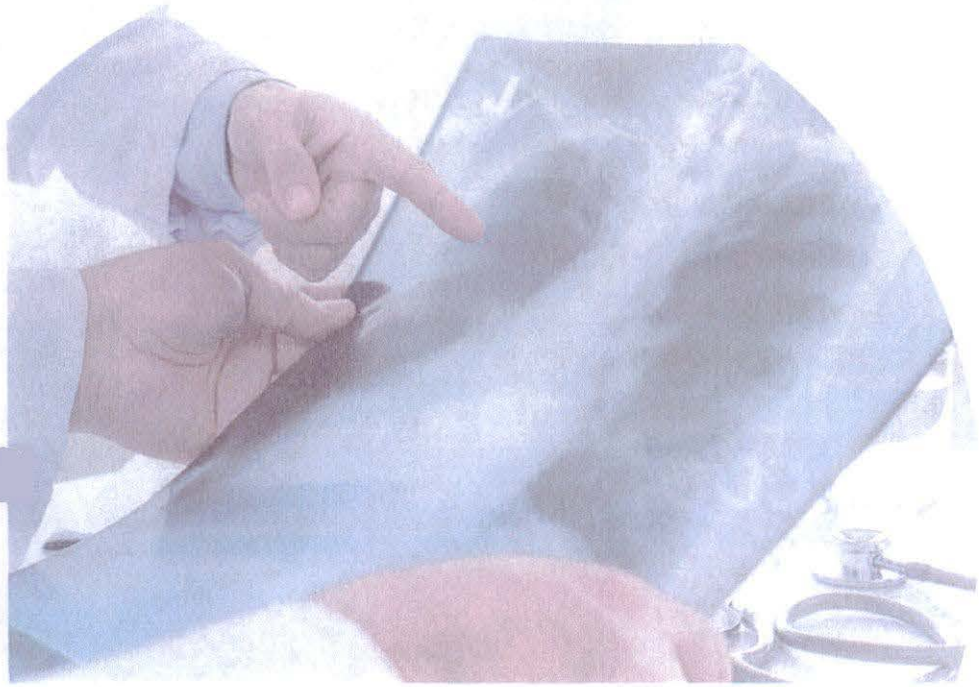
Remember, you will get well only if you take your medicines exactly as directed by your doctor or nurse.

*Think about people who may have spent time with you, such as family members, close friends, and coworkers. The local health department may need to test them for TB infection. TB is especially dangerous for children and people with HIV. If infected with TB germs, these people need medicine right away to keep from developing TB disease.*

## Additional TB Resources

For additional information about latent TB infection (LTBI) and TB disease, please visit the CDC TB website. Patient materials on LTBI and TB disease are also available in multiple languages at CDC's TB webpage: General Public Communication and Education Resources and Find TB Resources.

For information on TB patient support and outreach, visit We Are TB. CDC also highlights the personal experiences of people who were diagnosed and treated for LTBI and TB disease, as well as the work of TB control professionals. Visit the CDC TB personal stories page for more information.



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For more information
or to order educational materials about TB,
contact your local Health Department
Or visit:

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National Center for HIV, Viral Hepatitis, STD,
and Tuberculosis Prevention
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