

# PULMONARY TUBERCULOSIS

Pulmonary tuberculosis (TB) is bacterial disease that attacks the lungs. The bacterium that causes TB is called *Mycobacterium tuberculosis*. One can get sick with TB if inhales the droplets exhaled by a person who has the disease. Although TB is preventable and treatable, according to the World Health Organization, up to 66 percent of the people who get sick with TB will die if they do not get proper medical care.

## TYPES OF TB:

**Latent TB:** Infection with the bacteria that cause TB. Most do not get sick right away because their immune systems can fight the germs. The disease goes to sleep and is called "latent TB." People with latent TB have no symptoms and cannot make other people sick—but they must still be tested and treated.

**TB Disease:** People with latent TB can develop symptoms and become contagious at any time. Then, they are said to have "TB disease."

## PEOPLE AT RISK:

- the elderly
- small children
- smokers
- people who already have an immune system problem, such as HIV
- people who do not regularly see a doctor, such as homeless people
- people who live in crowded conditions, such as prisons

## CATCHING TB

One can become infected with TB by breathing in the tiny droplets of air exhaled by a TB patient while coughing, sneezing, laughing, or singing. TB germs can float in the air for several hours, so it is possible to inhale them even when the sick person is not in the same environment.

## SYMPTOMS:

People with latent TB have no symptoms, but they should still be treated. Symptoms of pulmonary TB include:

- coughing that continues for several days
- coughing up blood
- fever, including low-grade, consistent fever
- excessive sweating
- chest pain
- unexplained weight loss
- fatigue

## **DIAGNOSIS:**

- Physical examination basing upon health history and lymph nodes
- Chest X-ray
- Skin Test (Tuberculin test / Mantoux Test):

The suspected person is injected of a very small amount (not enough to make you sick) of the protein called tuberculin under the skin. The location of the spot may itch a little, but it is important not to scratch it, as this could make the test result hard to read. Then the spot is being observed for 2-3 days. A hardened swelling of five or more mm is an indication of TB infection. Redness at the location of the injection is normal and is not a sign of a TB infection.

- Sputum culture

## **TREATMENT:**

People will need to take medications for six months or longer. The four most common TB medicines are:

- isoniazid
- rifampin (Rifadin, Rimactane)
- ethambutol (Myambutol)
- pyrazinamide

Stopping treatment or skipping doses can make TB resistant to medicines, leading to a very dangerous type of TB called “multidrug-resistant TB” (MDR TB).

For complete treatment, doctors recommend an approach called “directly observed therapy” (DOT). With DOT, a healthcare professional such as a nurse meets with the patient every day or several times a week to administer the medication so that the patient don't have to remember to take it on own. No dosage should be missed.

## **COMPLICATIONS**

Untreated TB disease is often fatal. Even treated, TB disease can cause long-term damage to the lungs, making breathing difficult or causing lung failure. Untreated pulmonary TB can spread to other organs including your brain, liver, or heart. This could damage these organs, and it is possibly fatal.

Prevention:

People with latent TB will not need to stay away from others. In case of TB disease, the patient needs to avoid close contact with others. Hygiene should be maintained.

# MENINGITIS

Meningitis is a disease caused by the inflammation of the protective membranes covering the brain and spinal cord known as the meninges. The inflammation is usually caused by an infection of the fluid surrounding the brain and spinal cord. Meningitis may develop in response to a number of causes, usually bacteria or viruses, but meningitis can also be caused by physical injury, cancer or certain drugs. The severity of illness and the treatment for meningitis differ depending on the cause. Thus, it is important to know the specific cause of meningitis.

## SIGNS & SYMPTOMS:

- Headache
- High fever
- Neck stiffness
- Confusion and altered mental status
- intolerance to bright light (photophobia)
- intolerance to loud noises (Phonophobia)
- irritability, drowsiness, or poor feeding in infants
- Skin rash

## CONSEQUENCES:

The brain tissue may swell, pressure inside the skull may increase and the swollen brain may herniate through the skull base. This may be noticed by a decreasing level of consciousness, loss of the pupillary light reflex, and abnormal posturing. The inflammation of the brain tissue may also obstruct the normal flow of CSF around the brain (hydrocephalus). Seizures may occur for various reasons.

Inflammation of the meninges may lead to abnormalities of the cranial nerves. Visual symptoms and hearing loss may persist after an episode of meningitis. Inflammation of the brain (encephalitis) or its blood vessels, as well as the formation of blood clots in the veins may all lead to weakness, loss of sensation, or abnormal movement or function of the part of the body supplied by the affected area of the brain

## COMPLICATIONS:

The infection may trigger sepsis, a systemic inflammatory response syndrome of falling blood pressure, fast heart rate, high or abnormally low temperature, and rapid breathing. Disseminated intravascular coagulation, the excessive activation of blood clotting, may obstruct blood flow to organs and paradoxically increase the bleeding risk. Gangrene of limbs can occur in meningococcal disease. Severe meningococcal and pneumococcal infections may result in hemorrhaging of the adrenal glands, leading to Waterhouse-Friderichsen syndrome, which is often fatal.

## CAUSES:

Meningitis is typically caused by an infection with microorganisms. Most infections are

due to viruses with bacteria, fungi, and protozoa being the next most common causes. It may also result from various non-infectious causes.

Bacterial: Streptococci, Meningococcus

Viral: Herpes virus, Varicella zoster virus, enterovirus

Fungal: Cryptococcus, Candida

Non-infectious: Spread of cancer to meninges, Certain drugs like antiinflammatory non-steroidal drugs, intravenous immunoglobulins etc.

#### **DIAGNOSIS:**

- Blood tests: CBC, Culture
- Analysis of the cerebrospinal fluid through lumbar puncture
- CT and MRI scan
- Agglutination tests

#### **TREATMENT:**

Antibiotics like [rifampicin](#), ciprofloxacin or ceftriaxone.

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# TYPHOID

Typhoid is a bacterial infection that easily spreads through contaminated water and food which can lead to a high fever, diarrhea, and vomiting. It can be fatal. It is caused by the bacteria *Salmonella typhi*. Along with high fever, it can cause abdominal pains headache, and loss of appetite. With treatment, most people make a full recovery. But untreated typhoid can lead to life-threatening complications.

## **SYMPTOMS**

It can take a week or two after infection for symptoms to appear. Some of these symptoms are:

- High fever, weakness, stomach pain, headache, poor appetite, rash, fatigue, confusion, constipation, diarrhea

Serious complications are rare, but can include intestinal bleeding or perforations in the intestine. This can lead to a life-threatening bloodstream infection (sepsis). Symptoms include nausea, vomiting, and severe abdominal pain.

Other complications are:

- Pneumonia, kidney or bladder infection, pancreatitis, myocarditis, endocarditis, meningitis, delirium, hallucinations, paranoid psychosis

## **ETIOLOGY**

Typhoid is caused by bacteria called *Salmonella typhi* (*S. typhi*). It's not the same bacterium that causes the food borne illness Salmonella. Its main method of transmission is the oral-fecal route, generally spreading in contaminated water or food. It can also be passed through direct contact with an infected person. In addition, there are a small number of people who recover but still carry *S. typhi*. These "carriers" can infect others. Some regions have a higher incidence of typhoid. These include Africa, India, South America, and Southeast Asia.

The infection is often passed on through contaminated food and drinking water, and it is more prevalent in places where hand-washing is less frequent. It can also be passed on by carriers who do not know they carry the bacteria. Bacterium lives in the intestines and bloodstream of humans. It spreads between individuals by direct contact with the feces of an infected person. No animals carry this disease, so transmission is always human to human. *S. typhi* enters through the mouth and spends 1 to 3 weeks in the intestine. After this, it makes its way through the intestinal wall and into the bloodstream. From the bloodstream, it spreads into other tissues and organs. The immune system of the host can do little to fight back because *S. typhi* can live within the host's cells, safe from the immune

system.

## DIAGNOSIS

Typhoid is diagnosed by detecting the presence of *S. typhi* via blood, stool, urine, or bone marrow sample by microscopic and bacterial culture methods.. The most widely used method is Widal test which is a serological test.

## PREVENTION

- don't drink from the tap or a well
- avoid ice cubes, popsicles, or fountain drinks unless you're certain they're made from bottled or boiled water
- buy bottled drinks whenever possible (carbonated water is safer than non-carbonated, be sure bottles are tightly sealed)
- non-bottled water should be boiled for one minute before drinking
- it's safe to drink pasteurized milk, hot tea, and hot coffee
- don't eat raw produce unless you can peel it yourself after washing your hands
- never eat food from street vendors
- don't eat raw or rare meat or fish, foods should be thoroughly cooked and still hot when served
- eat only pasteurized dairy products and hard-cooked eggs
- avoid salads and condiments made from fresh ingredients
- don't eat wild game
- wash your hands often, especially after using the bathroom and before touching food (use lots of soap and water if available, if not, use hand sanitizer containing at least 60 percent alcohol)
- don't touch your face unless you've just washed your hands
- avoid direct contact with people who are sick
- if you're sick, avoid other people, wash your hands often, and don't prepare or serve food

## VACCINATION

For most healthy people, the typhoid vaccine is not necessary. But its needed if-

- a carrier
- in close contact with a carrier

- traveling to a country where typhoid is common
- a laboratory worker who may come in contact with *S. typhi*

The typhoid vaccine comes in two forms:

- **Inactivated typhoid vaccine.** This vaccine is a one-dose injection. It's not for children younger than two years old and it takes about two weeks to work.
- **Live typhoid vaccine.** This vaccine is not for children under age six. It's an oral vaccine given in four doses, two days apart. It takes at least a week after the last dose to work. You can have a booster every five years.

## TREATMENT

A blood test can confirm the presence of *S. typhi*. Typhoid is treated with antibiotics such as azithromycin, ceftriaxone, and fluoroquinolones.

## LEPROSY

Leprosy is a chronic, progressive bacterial infection that causes severe, disfiguring skin sores and nerve damage in the arms, legs, and skin areas around the body.

It primarily affects the nerves of the extremities, the skin, the lining of the nose, and the upper respiratory tract. Leprosy produces skin ulcers, nerve damage, and muscle weakness. If it isn't treated, it can cause severe disfigurement and significant disability. Leprosy is one of the oldest diseases in recorded history. Leprosy is actually not that contagious. You can catch it only if you come into close and repeated contact with nose and mouth droplets from someone with untreated leprosy. Children are more likely to get leprosy than adults.

## ETIOLOGY

Leprosy is caused by a slow-growing type of bacteria called *Mycobacterium leprae* (*M. leprae*). Leprosy is also known as Hansen's disease, after the scientist who discovered *M. leprae* in 1873. It's thought that leprosy spreads through contact with the mucosal secretions of a person with the infection. This usually occurs when a person with leprosy sneezes or coughs. The disease isn't highly contagious. However, close, repeated contact with an untreated person for a longer period of time can lead to contracting leprosy.

The bacterium responsible for leprosy multiplies very slowly. The disease has an average incubation period (the time between infection and the appearance of the first symptoms) of five years. Symptoms may not appear for as long as 20 years.

## SYMPTOMS

Leprosy primarily affects the skin and the nerves outside the brain and spinal cord, called the peripheral nerves. It may also strike the eyes and the thin tissue lining the inside of the nose. The main symptom of leprosy is disfiguring skin sores, lumps, or bumps that do not go away after several weeks or months. The skin sores are pale-colored.

Nerve damage can lead to: Loss of feeling in the arms and legs, Muscle weakness.

It usually takes about 3 to 5 years for symptoms to appear after coming into contact with the leprosy-causing bacteria. Some people do not develop symptoms until 20 years later. The time between contact with the bacteria and the appearance of symptoms is called the incubation period. Leprosy's long incubation period makes it very difficult for doctors to determine when and where a person with leprosy got infected.

## **FORMS OF LEPROSY**

Leprosy is defined by the number and type of skin sores you have. Specific symptoms and treatment depend on the type of leprosy you have. The types are:

**Tuberculoid.:** A mild, less severe form of leprosy. People with this type have only one or a few patches of flat, pale-colored skin (paucibacillary leprosy). The affected area of skin may feel numb because of nerve damage underneath. Tuberculoid leprosy is less contagious than other forms.

**Lepromatous:** A more severe form of the disease. It has widespread skin bumps and rashes (multibacillary leprosy), numbness, and muscle weakness. The nose, kidneys, and male reproductive organs may also be affected. It is more contagious than tuberculoid.

**Borderline.** People with this type of leprosy have symptoms of both the tuberculoid and lepromatous forms.

## **DIAGNOSIS**

- 1) Physical Examination
- 2) Lepromin skin test: A small amount of leprosy-causing bacterium is injected which has been inactivated, into the skin, typically on the upper forearm. People who have tuberculoid or borderline tuberculoid leprosy will experience a positive result at the injection site.
- 3) A small sample of the abnormal skin will be removed and examined. This is called a skin biopsy. A skin smear test may also be done. With paucibacillary leprosy, no bacteria will be detected. Bacteria are expected to be found on a skin smear test from a person with multibacillary leprosy.

## **TREATMENT**

Leprosy can be cured. Treatment depends on the type of leprosy. Antibiotics are used to treat the infection. Long-term treatment with two or more antibiotics is recommended, usually from six months to a year. Antibiotics cannot treat the nerve damage. WHO developed a multidrug therapy in 1995 to cure all types of leprosy. It's available free of



charge worldwide. Additionally, several antibiotics treat leprosy by killing the bacteria that causes it. These antibiotics include: dapsone (Aczone), rifampin (Rifadin), clofazimine (Lamprene), minocycline (Minocin), ofloxacin (Ocuflox). Anti-inflammatory drugs are used to control nerve pain and damage related to leprosy. This may include steroids, such as prednisone.

Patients with leprosy may also be given thalidomide, a potent medication that suppresses the body's immune system. It helps treat leprosy skin nodules.

## **COMPLICATIONS**

Without treatment, leprosy can permanently damage your skin, nerves, arms, legs, [feet](#), and [eyes](#).

Complications of leprosy can include:

- Blindness or glaucoma
- Disfiguration of the face (including permanent swelling, bumps, and lumps)
- Erectile dysfunction and infertility in men
- Kidney failure
- Muscle weakness that leads to claw-like hands or an inability to flex the feet
- Permanent damage to the inside of the nose
- Permanent damage to the nerves outside the brain and spinal cord, including those in the arms, legs, and feet. Nerve damage can lead to a dangerous loss of feeling.

## **URINARY TRACT INFECTION (UTI)**

Urinary tract infection (UTI) is an infection mostly by bacteria in any part of urinary system- kidneys, ureters, bladder and urethra. Most infections involve the lower urinary tract – the bladder and the urethra. Women are at greater risk of developing a UTI than are men. Infection limited to bladder can be painful and annoying. However, serious consequences can occur if a UTI spreads to kidneys.

## **SYMPTOMS**

Urinary tract infections don't always cause signs and symptoms, but when they do they may include:

- A strong, persistent urge to urinate
- A burning sensation when urinating
- Passing frequent, small amounts of urine
- Urine that appears cloudy
- Urine that appears red, bright pink or cola-colored – a sign of blood in the urine
- Strong-smelling urine
- Pelvic pain, in women

## TYPES

Each type of UTI may result in more-specific signs and symptoms, depending on which part of your urinary tract is infected.

Part affected	Signs and symptoms
Kidneys (acute pyelonephritis)	Upper back and side (flank) pain, High fever, Shaking and chills, Nausea, Vomiting
Bladder (cystitis)	Pelvic pressure, Lower abdomen discomfort, Frequent, painful urination, Blood in urine
Urethra (urethritis)	Burning with urination, Discharge

## ETIOLOGY

Urinary tract infections typically occur when bacteria enter the urinary tract through the urethra and begin to multiply in the bladder. Although the urinary system is designed to keep out such microscopic invaders, these defenses sometimes fail. When that happens, bacteria may take hold and grow into a full-blown infection in the urinary tract.

The most common UTIs occur mainly in women and affect the bladder and urethra.

- **Infection of the bladder (Cystitis).** This type of UTI is usually caused by *Escherichia coli*, a type of bacteria commonly found in the gastrointestinal (GI) tract. However, sometimes other bacteria are responsible. All women are at risk of cystitis because of their anatomy – specifically, the short distance from the urethra to the anus and the urethral opening to the bladder.
- **Infection of the urethra (Urethritis).** This type of UTI can occur when GI bacteria spread from the anus to the urethra. Also, because the female urethra is close to the vagina, sexually transmitted infections, such as herpes, gonorrhea, chlamydia and mycoplasma, can cause urethritis.

## RISK FACTORS

Urinary tract infections are common in women, and many women experience more than one infection during their lifetimes. Risk factors specific to women for UTIs include:

- **Female anatomy.** A woman has a shorter urethra than a man does, which shortens the distance that bacteria must travel to reach the bladder.
- **Sexual activity.** Sexually active women tend to have more UTIs than do women who aren't sexually active. Having a new sexual partner also increases your risk.
- **Certain types of birth control.** Women who use diaphragms for birth control may be at higher risk, as well as women who use spermicidal agents.
- **Menopause.** After menopause, a decline in circulating estrogen causes changes in the urinary tract that make you more vulnerable to infection.

Other risk factors for UTIs include:

- **Urinary tract abnormalities.** Babies born with urinary tract abnormalities that don't allow urine to leave the body normally or cause urine to back up in the urethra have an increased risk of UTIs.
- **Blockages in the urinary tract.** Kidney stones or an enlarged prostate can trap urine in the bladder and increase the risk of UTIs.
- **A suppressed immune system.** Diabetes and other diseases that impair the immune system – the body's defense against germs – can increase the risk of UTIs.
- **Catheter use.** People who can't urinate on their own and use a tube (catheter) to urinate have an increased risk of UTIs. This may include people who are hospitalized, people with neurological problems that make it difficult to control their ability to urinate and people who are paralyzed.
- **A recent urinary procedure.** Urinary surgery or an exam of your urinary tract that involves medical instruments can both increase your risk of developing a urinary tract infection.

## **COMPLICATIONS**

When treated promptly and properly, lower urinary tract infections rarely lead to complications. But left untreated, a urinary tract infection can have serious consequences.

Complications of a UTI may include:

- Recurrent infections, especially in women who experience two or more UTIs in a six-month period or four or more within a year.
- Permanent kidney damage from an acute or chronic kidney infection (pyelonephritis) due to an untreated UTI.
- Increased risk in pregnant women of delivering low birth weight or premature infants.
- Urethral narrowing (stricture) in men from recurrent urethritis, previously seen with gonococcal urethritis.
- Sepsis, a potentially life-threatening complication of an infection, especially if the infection works its way up your urinary tract to your kidneys.

## **PREVENTION**

- **Drink plenty of liquids, especially water.** Drinking water helps dilute your urine and ensures that you'll urinate more frequently – allowing bacteria to be flushed from your urinary tract before an infection can begin.
- **Drink cranberry juice.** Although studies are not conclusive that cranberry juice prevents UTIs, it is likely not harmful.
- **Wipe from front to back.** Doing so after urinating and after a bowel movement helps prevent bacteria in the anal region from spreading to the vagina and urethra.
- **Empty bladder soon after intercourse.** Also, drink a full glass of water to help flush

bacteria.

- **Avoid potentially irritating feminine products.** Using deodorant sprays or other feminine products, such as douches and powders, in the genital area can irritate the urethra.
- **Change your birth control method.** Diaphragms, or unlubricated or spermicide-treated condoms, can all contribute to bacterial growth.

## DIAGNOSIS

- **Urine examination** for white blood cells, red blood cells or bacteria.
- **Urine Culture** to know the causal bacteria of infection and which medications will be most effective.
- **Radiology:** CT scan, MRI Scan
- **Cytoscopy:** Use of a long, thin tube with a lens (cystoscope) to see inside urethra and bladder.

## TREATMENT

Antibiotics usually are the first line treatment for urinary tract infections. Which drugs are prescribed and for how long depend on health condition and the type of bacteria found in your urine.

**Simple infection:** Trimethoprim/sulfamethoxazole (Bactrim, Septra, others), Fosfomycin (Monurol), Nitrofurantoin (Macrochantin, Macrobid), Cephalexin (Keflex), Ceftriaxone. Doctor may also prescribe a pain medication (analgesic) that numbs the bladder and urethra to relieve burning while urinating, but pain usually is relieved soon after starting an antibiotic.

**Frequent infections:** Low-dose antibiotics, initially for six months but sometimes longer, Self-diagnosis and treatment, A single dose of antibiotic after sexual intercourse, Vaginal estrogen therapy in postmenopausal

**Severe infection:** The treatment performed with intravenous antibiotics in a hospital.

## **IMMUNODEFICIENCIES**

Defects in one or more components of the immune system can result in its failing to recognize and respond properly to antigens. Such immunodeficiencies can make a person more prone to infection than those people capable of a complete and active immune response. The fundamental biological errors responsible for them remain largely unknown. To date, most genetic errors associated with these immunodeficiencies are located on the X chromosome and produce primary or congenital immunodeficiencies. Other immunodeficiencies can be acquired because of infections by immunosuppressive microorganisms i.e. viruses (HIV).

### **AIDS (Acquired immune deficiency syndrome)**

It is a syndrome caused by a virus called HIV (Human Immunodeficiency Virus). HIV is the

virus which attacks the T-cells in the immune system. The illness alters the immune system, making people much more vulnerable to infections and diseases. This susceptibility worsens as the syndrome progresses. HIV is found in the body fluids of an infected person (semen and vaginal fluids, blood and breast milk). The virus is passed from one person to another through blood-to-blood and sexual contact. In addition, infected pregnant women can pass HIV to their babies during pregnancy, delivering the baby during childbirth, and through breast feeding. HIV infection causes AIDS to develop. However, it is possible to be infected with HIV without developing AIDS. HIV can be transmitted in many ways, such as vaginal, oral sex, anal sex, blood transfusion, and contaminated hypodermic needles. There is currently no cure for HIV or AIDS. Treatments can slow the course of the condition - some infected people can live a long and relatively healthy life.

## **Symptoms**

Many people with HIV have no symptoms for several years. Others may develop symptoms similar to flu, usually two to six weeks after catching the virus. The symptoms can last up to four weeks. Symptoms of early HIV infection may include: fever, chills, joint pain, muscle ache, sore throat sweats (particularly at night), enlarged glands, a red rash, tiredness, weakness, weight loss. In many cases, after the initial symptoms disappear, there will not be any further symptoms for many years called as Asymptomatic HIV infection. During this time, the virus carries on developing and damages the immune system. This process can take up to 10 years. The infected person will experience no symptoms, feel well and appear healthy. If left untreated, HIV weakens the ability to fight infection. The person becomes vulnerable to serious illnesses. This stage of infection is known as AIDS. Symptoms of late-stage HIV infection may include: blurred vision, diarrhea, which is usually persistent or chronic, dry cough, fever of above 37C (100F) lasting for weeks, night sweats, permanent tiredness, shortness of breath, swollen glands lasting for weeks, weight loss, white spots on the tongue or mouth. During late-stage HIV infection, the risk of developing a life-threatening illness is much greater. Examples include: esophagitis (an inflammation of the lining of the lower end of the esophagus), infections to the nervous system, pneumonia, some cancers, toxoplasmosis, tuberculosis.

## **Diagnosis:**

Blood rapid test

Western blot or indirect immunofluorescence assay

PCR of HIV RNA

## **Treatment:**

Life-threatening illnesses may be controlled and treated with proper HIV treatment. Currently, there is no vaccine or cure for HIV/AIDS. But treatments have evolved which are much more efficacious - they can improve patients' general health and quality of life considerably. Like:

1. Emergency HIV pills: If an individual believes they have been exposed to the virus within the last 72 hours (three days), anti-HIV medication, called PEP (post-exposure prophylaxis) may stop infection. The treatment should be taken as soon as possible after contact with the virus. The therapy is designed to reduce the level of HIV in the blood.
2. Antiretroviral drugs: HIV is treated with antiretrovirals (ARVs). The treatment fights the

HIV infection and slows down the spread of the virus in the body. Generally, patients take a combination of medications called HAART (highly active antiretroviral therapy). Therapy must be taken on a regular schedule, every time.

3. Complementary or alternative medicine: Although widely used, alternative/complementary medications, such as herbal ones, have not been proven to be effective or ineffective. According to some limited studies, mineral or [vitamin](#) supplements may provide some benefits.
  4. Healthy diet with vitamins and minerals.
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## GONORRHEA

Gonorrhea is a sexually transmitted disease (STD). It's caused by infection with the bacterium *Neisseria gonorrhoeae*. It tends to infect warm, moist areas of the body, including the: urethra (the tube that drains urine from the urinary bladder), eyes, throat, vagina, anus, female reproductive tract (the fallopian tubes, cervix, and uterus). Gonorrhea passes from person to person through unprotected oral, anal, or vaginal sex. People with numerous sexual partners or those who don't use a condom are at greatest risk of infection. The best protections against infection are abstinence, monogamy (sex with only one partner), and proper condom usage. Behaviors that make a person more likely to engage in unprotected sex also increase the likelihood of infection. These behaviours include alcohol abuse and illegal drug abuse, particularly intravenous drug use.

### SYMPTOMS

Symptoms usually occur within two to 14 days after exposure. However, some people infected with gonorrhea never develop noticeable symptoms. It's important to remember that a person with gonorrhea who doesn't have symptoms, also called a nonsymptomatic carrier, is still contagious. A person is more likely to spread the infection to other partners when they don't have noticeable symptoms.

**Men:** Men may not develop noticeable symptoms for several weeks. Some men may never develop symptoms. Typically, the infection begins to show symptoms a week after its transmission. The first noticeable symptom in men is often a burning or painful sensation during urination. As it progresses, other symptoms may include: greater frequency or urgency of urination, a pus-like discharge (or drip) from the penis (white, yellow, beige, or greenish), swelling or redness at the opening of the penis, swelling or pain in the testicles, a persistent sore throat. The infection will stay in the body for a few weeks after the symptoms have been treated. In rare instances, gonorrhea can continue to cause damage to the body, specifically the urethra and testicles. Pain may also spread to the rectum.

**Women:** Many women don't develop any overt symptoms of gonorrhea. When women do develop symptoms, they tend to be mild or similar to other infections, making them more difficult to identify. Gonorrhea infections can appear much like common vaginal yeast or bacterial infections. Symptoms include: discharge from the vagina (watery, creamy, or slightly green), pain or burning sensation while urinating, the need to urinate more frequently, heavier periods or spotting, sore throat, pain upon engaging in sexual intercourse, sharp pain in the lower abdomen, fever.

**Gonorrhea can also affect these parts of the body:**

- **Rectum:** Signs and symptoms include anal itching, pus-like discharge from the rectum, spots of bright red blood on toilet tissue and having to strain during bowel movements.
- **Eyes:** Gonorrhea that affects eyes can cause eye pain, sensitivity to light, and pus-like discharge from one or both eyes.

- **Throat:** Signs and symptoms of a throat infection might include a sore throat and swollen lymph nodes in the neck.
- **Joints:** If one or more joints become infected by bacteria (septic arthritis), the affected joints might be warm, red, swollen and extremely painful, especially during movement.

## ETIOLOGY

The bacterium *N. gonorrhoeae* is responsible for gonorrhea infection. These bacteria thrive in a warm, moist environment. As a result, the infection can affect any of the mucous membranes, including those in the genital area, mouth, throat, eyes, and rectum. A person transmits the infection to another individual through sexual contact that involves the penis, vagina, anus, or mouth. Males do not need to ejaculate to pass on or get gonorrhea. A pregnant woman can also pass the infection on to the baby during delivery. All sexually active individuals are at risk of having a gonorrhea infection.

## DIAGNOSIS

- Healthcare professionals can take a sample of fluid from the symptomatic area with a swab (penis, vagina, rectum, or throat) and place it on a glass slide.
- Blood Test
- Bacterial Culture

## COMPLICATIONS

- **Infertility in Women:** Women are at greater risk of long-term complications from untreated infections. Untreated infection with gonorrhea in women may ascend up the female reproductive tract and involve the uterus, fallopian tubes, and ovaries. This condition is known as pelvic inflammatory disease (PID) and can cause severe and chronic pain and damage the female reproductive organs. Women may also develop blocking or scarring of the fallopian tubes, which can prevent future pregnancy or cause ectopic pregnancy. Gonorrhea infection may pass to a newborn infant during delivery.
- **Infertility in Men:** Men may experience scarring of the urethra. Men may also develop a painful abscess in the interior of the penis. The infection can cause reduced fertility or sterility.
- **Spread of disease:** When gonorrhea infection spreads to the bloodstream, both men and women can experience arthritis, heart valve damage, or inflammation of the lining of the brain or spinal cord. These are rare but serious conditions.
- **Increased risk of HIV/AIDS:** Having gonorrhea makes you more susceptible to infection with human immunodeficiency virus (HIV), the virus that leads to AIDS. People who have both gonorrhea and HIV are able to pass both diseases more readily to their partners.
- **Complications in babies:** Babies who get gonorrhea from their mothers during birth can develop blindness, sores on the scalp and infections.



## **TREATMENT**

Modern antibiotics can cure most gonorrhea infections. Most states also provide free diagnosis and treatment at state-sponsored health clinics. Gonorrhea is usually treated with an antibiotic injection of Ceftriaxone one time to the buttocks or a single dose of Azithromycin by mouth.

## **PREVENTION**

- Safe Sex
  - Regular STD test
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## SYPHILIS

Syphilis is a sexually transmitted disease (STD) caused by a type of bacteria known as *Treponema pallidum*. The first sign of syphilis is a small, painless sore. It can appear on the sexual organs, rectum, or inside the mouth. This sore is called a chancre. Syphilis is only spread through direct contact with syphilitic chancres. It can't be transmitted by sharing a toilet with another person, wearing another person's clothing, or using another person's eating utensils.

### **Etiology**

The cause of syphilis is infection with the spirochete *T pallidum*. *T pallidum* is solely a human pathogen and does not naturally occur in other species. Transmission of *T pallidum* occurs via penetration of the spirochetes through mucosal membranes and abrasions on epithelial surfaces. It is primarily spread through sexual contact but can be spread by exposure to blood products and transferred in utero. *T pallidum* is a labile organism that cannot survive drying or exposure to disinfectants; thus, fomite transmission is virtually impossible. Unprotected sex is the major risk factor for the acquisition of syphilis.

### **Stages of syphilis infection**

The four stages of syphilis are: primary, secondary, latent, tertiary. Syphilis is most infectious in the first two stages. When syphilis is in the hidden, or latent, stage, the disease remains active but often with no symptoms. Tertiary syphilis is the most destructive to health.

### **Primary syphilis**

The primary stage of syphilis occurs about three to four weeks after a person contracts the bacteria. It begins with a small, round sore called a chancre. A chancre is painless, but it's highly infectious. This sore may appear wherever the bacteria entered the body, such as on or inside the mouth, genitals, or rectum. On average, the sore shows up around three weeks after infection, but it can take between 10 and 90 days to appear. The sore remains between two to six weeks. Syphilis is transmitted by direct contact with a sore. This usually occurs during sexual activity, including oral sex.

## **Secondary syphilis**

Skin rashes and a sore throat may develop during the second stage of syphilis. The rash won't itch and is usually found on the palms and soles, but it may occur anywhere on the body. Some people don't notice the rash before it goes away.

Other symptoms of secondary syphilis may include: headaches, swollen lymph nodes, fatigue, fever, weight loss, hair loss, aching joints.

**Latent syphilis-** The third stage of syphilis is the latent, or hidden, stage. There won't be any noticeable symptoms at this stage. However, the bacteria remain in the body. This stage could last for years before progressing to tertiary syphilis.

## **Tertiary syphilis**

The last stage of infection is tertiary syphilis. Tertiary syphilis can occur years or decades after the initial infection. Tertiary syphilis can be life-threatening. Some other potential outcomes of tertiary syphilis include: blindness, deafness, mental illness, memory loss, destruction of soft tissue and bone, neurological disorders, such as stroke or meningitis, heart disease, neurosyphilis, which is an infection of the brain or spinal cord

## **Diagnosis**

Physical Examination

Blood test

Culture of sample from sore

Spinal fluid analysis for tertiary syphilis

## **Treatment**

Primary and secondary syphilis are easy to treat with a penicillin injection. Penicillin is one of the most widely used antibiotics and is usually effective in treating syphilis. People who are allergic to penicillin will likely be treated with a different antibiotic, such as: doxycycline,

azithromycin, ceftriaxone.

In case of neurosyphilis penicillin is given intravenously with hospital stay. During treatment, make sure to avoid sexual contact until all sores on the body are healed.

### Prevention

- The best way to prevent syphilis is to practice safe sex using condom.
- Use of dental latex or condoms during oral sex.
- Avoid sharing sex toys.
- Regular screening for STDs
- Avoid sharing needles if using injected drugs

### Complications

1. **Pregnant mothers and newborns:** Mothers infected with syphilis are at risk for miscarriages, still births, or premature births. There's also a risk that a mother with syphilis will pass the disease on to her fetus. This is known as congenital syphilis. Congenital syphilis can be life-threatening. Babies born with congenital syphilis can also have deformities, developmental delays, seizures, rashes, fever, swollen liver or spleen, anemia, jaundice, infectious sores
2. **HIV:** People with syphilis have a significantly increased chance of contracting HIV. The sores the disease cause make it easier for HIV to enter the body.