

## Syphilis

### **Basics:**

Syphilis is a sexually transmitted disease characterized by contagious, open sores on the genitals, in the anal region, or in the mouth. Syphilis develops in three characteristic stages. It starts with a usually painless, open sore at the point of contact. Months later, a rash appears, which may be accompanied by fever, enlarged lymph nodes, sore throat, weight loss, malaise, loss of appetite, headache, stiff neck, and achy joints and bones. Syphilis then becomes latent, or hidden, for years.

Most often syphilis can be treated with a single antibiotic injection. Syphilis can be effectively treated with penicillin in its early stages; however, if left untreated, it can progress to cause severe physical and neurological disease.

### **Causes:**

Syphilis is transmitted through direct contact with a bacteria-filled sore or rash on a person already infected with the disease. The bacteria that cause syphilis are transmitted most often during sexual activity with a partner who has a sore (chancre). Syphilis can also be transmitted through direct contact with the rash in the second stage of the disease.

The bacteria that cause syphilis can spread from an infected mother to her fetus, or more rarely, from a tainted blood transfusion. Because syphilis can be transmitted from mother to fetus in utero, pregnant women are tested for syphilis infection as part of routine prenatal care. Syphilis can also be contracted through a blood transfusion, although routine screening of blood products makes this unlikely.

### **Symptoms:**

In the first stage of syphilis, a painless open sore will appear at the site of infection three to four weeks after transmission [Table 1]. The typical round, open sore is surrounded by firm, raised edges, and if left untreated, can last for two to six weeks. While chancres are most commonly located on the genitals, they can appear wherever direct contact was made, for example, in the anal area or within the oral cavity. In addition, lymph nodes in the area of the chancre may be swollen, though not tender. Because chancres are typically painless and may be located on such inconspicuous sites as the cervix, within the vagina, or near the anus, these sores go unnoticed by one-third of infected men and half of the infected women. Sores that appear on the lips and fingers tend to be painful.

In the second stage of syphilis, you will experience a rash and flu-like symptoms. The second stage of syphilis starts 6 to 12 weeks after the initial infection, often beginning while the first chancre is healing. You may feel ill, and have a fever, sore throat,

headache, or a rash and enlarged lymph nodes. Rashes have a variety of appearances, and more than one type can appear simultaneously. The rash may appear as rough, copper penny spots on the palms of the hands and bottoms of the feet; fine red dots; small blisters filled with pus; slimy white patches in the mouth; or thick gray or pink patches. The rash may be short-lived, come and go, or last as long as a year. Mouth sores are common.



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Inflammation throughout the body can produce seemingly unrelated symptoms. More unusual signs and symptoms due to inflammation throughout the body can include blurred vision, aching joints, and jaundice, which gives the skin a yellow tinge. Some patients also develop an infection of the brain (meningitis) with headache, neck stiffness, and hearing problems.

A symptom-free period follows the second stage of syphilis, and may last for years, or for the rest of a person's lifetime. After secondary syphilis, a latent stage begins that is referred to as early latent syphilis during the first year after initial infection, and as late latent syphilis thereafter.

If left untreated, syphilis can lead to heart or mental symptoms, or formation of small lumps throughout the body. The serious, late form of syphilis (known as tertiary syphilis) can develop if the disease is left untreated.

About one-third of untreated patients develop tertiary syphilis, which typically takes one of following three forms:

*Benign tertiary syphilis* is rare, and involves the growth of small lumps, called gummas, throughout the body. These painless, circular sores may be evident on the skin. Gummas may also develop on the liver, causing tenderness and low-grade fever; on the bones, causing pain; or on the stomach or upper respiratory tract. They may also invade the part of the palate or nasal passages, causing perforations.

*Cardiovascular syphilis* may cause inflammation of the major blood vessel leaving the heart (the aorta), leading to a weakened area that balloons out (an aneurysm), or a leaky valve within the heart. Symptoms include cough, shortness of breath, hoarseness, trouble swallowing, chest pain, or heart failure.

*Neurosyphilis* can lead to many symptoms, including headache, dizziness, personality changes, convulsions, changes in mental function, and paralysis. Eye or ear involvement can lead to blindness or deafness.



Small lumps, called gummas, develop throughout the body during the late form of syphilis. Gummas appear as painless circular sores on the skin, but may also develop on the liver, bones, stomach, upper respiratory tract, palate, or nasal passages, causing pain, fever, tenderness, or tissue perforations.

<b>Primary syphilis</b>	Painless sore (chancre) at site of infection, with hard edges and an open center that oozes fluid.
<b>Secondary syphilis</b>	Rash
	Fever, malaise, and other flu-like symptoms
	Mouth sores
<b>Tertiary syphilis</b>	Small lumps on the skin (gummas), pain, low-grade fever
	Symptoms of heart disease: cough, shortness of breath, hoarseness, trouble swallowing, chest pain
	Neurological manifestations: headache, dizziness, personality changes, convulsions, changes in mental function, and paralysis

### **Risk Factors:**

People who engage in unprotected sexual activity with multiple partners are at the highest risk for contracting syphilis. Syphilis is most often transmitted through direct contact with a chancre. While such sores usually appear on the genitals, they can also develop in the anal area, mouth, or even on the fingers. Safe sex practices to prevent contact with sores are essential because sores may be hidden in such areas on the body as the cervix or in the vagina, and are normally painless. This hidden quality means that not only are people often unaware of being infected with the disease, but that the disease-transmitting sores will not always be apparent to their sexual partner.

In the US, the rate of new cases was on the decline until 2001, when new cases started to increase. According to the CDC, this increase was primarily in men who have sex with men. The CDC has reported declining rates among other groups, including African Americans and those living in Southern states.

### **Diagnosis:**

Syphilis may be suspected, but not confirmed, based on your history and physical exam. Your doctor will ask about your sexual history and risk factors, including whether you had sex with multiple partners. He or she will examine any unusual lesion on the genitals, or other area where sexual contact may have occurred. The first syphilis sore is painless, and has a characteristic appearance that will distinguish it from the sores of herpes or chancroid—two sexually transmitted diseases that cause painful genital ulcers.

Since syphilis in its later stages is characterized by a wide range of symptoms that could be confused with other problems, syphilis in its later stages may not be suspected by an examining physician.

The bacteria that cause syphilis can be detected by examining fluid from open sores. Fluid from a syphilis sore or an oozing rash of the second stage of the disease can be examined under a microscope for relevant bacteria. Blood tests that detect the body's immune response to syphilis may not immediately provide an accurate result due to a natural delay in the immune system's reaction to the first stage of the disorder. Therefore,

microscopic examination of sores or rashes is particularly important for diagnosis of syphilis.

Syphilis is often detected by routine blood tests of high-risk individuals. Because syphilis sores often pass unnoticed, routine screens are commonly carried out in susceptible populations, such as military recruits, or in those for whom the disease would pose special problems, such as pregnant women. This is accomplished with one of several blood tests, the most common ones known as the VDRL (Venereal Disease Research Laboratory), the RPR (rapid plasma reagin), and the MHA-TP (microhemagglutination assay for antibody to *T. pallidum*). These tests detect antibodies that the body manufactures after exposure to syphilis.

### **Prevention and Screening**

Avoid having sexual relations while under the influence of alcohol and drugs. Using alcohol can impair your judgment and ability to practice safer sexual practices, thus increasing your chances of acquiring a sexually transmitted disease.

Use condoms consistently and correctly to reduce the likelihood of disease transmission.

The US government's Centers for Disease Control and Prevention recommend the following:

Use a new latex condom with each act of intercourse. Do not use condoms made of animal products, as they offer inadequate protection. If you have a latex allergy, consult your doctor for help in choosing a safe condom.

Handle the condom carefully to avoid damaging it with fingernails, teeth, or other sharp objects.

Put the condom on after the penis is erect and before any genital contact with your partner.

Ensure that no air is trapped in the tip of the condom.

Ensure adequate lubrication during intercourse, possibly requiring use of K-Y Jelly or glycerin. Never use oil-based lubricant such as petroleum jelly, shortening, mineral oil, massage oils, body lotions, or cooking oil. Oil can weaken latex, leading to tears in the condom.

Hold the condom firmly against the base of the penis during withdrawal.

Withdraw while the penis is still erect to prevent slippage.

Avoid having sex while under the influence of alcohol or drugs, as doing so will impair your judgment and ability to practice 'safe sex.'

Never have intimate relations with someone who has a suspicious sore on or near the genitals. If you have had such contact, or have had a partner who was diagnosed with syphilis, ask your doctor to test you for sexually transmitted diseases.

Routine blood tests are an inexpensive and important public health measure for all those at high risk for syphilis. All sexually active people especially those with multiple partners should be screened for syphilis. All pregnant women should be tested, and newborns should be screened if the mother's status was not determined during pregnancy. A woman who delivers a stillborn infant after 20 weeks of pregnancy should also be tested.

**Urgent Care:**

See your doctor at once if you have a sore on the genital or rectal area, any painless sore in the mouth, or any unusual rashes. Treatment is easiest and most effective if syphilis is diagnosed in its early stages. If syphilis is left untreated, serious complications can develop, including signs of heart failure and neurological manifestations.

See your doctor immediately if you have symptoms of late syphilis. The symptoms of late syphilis are quite varied, and may reflect manifestations of many other diseases. Symptoms of heart disease such as shortness of breath or chest pain; neurological disturbance such as changes in vision, hearing, personality, or dizziness; or unusual rashes, pains, or recurring fevers all deserve prompt medical attention.

**Self Care:**

Practice safe-sex precautions-particularly condom use-to prevent sexually transmitted diseases. If you are a male, use a condom during sexual activity. If you are a female, insist that any male partners use a condom. Females may also consider using a vaginal shield (also known as a female condom). Do not have intimate relations with someone who has genital sores until the problem has been diagnosed and successfully treated.

If you had sexual relations with a partner who was diagnosed with syphilis, you must be tested, even if you have not noticed genital sores or other symptoms. Similarly, if you have been diagnosed with syphilis, you must contact prior sexual partners who may have been exposed.

Sexually active individuals should periodically undergo a screening test on their blood for syphilis; particularly during pregnancy.

**Drug Therapy:**

Your doctor is the best source of information on the drug treatment choices available to you.

**Special Circumstances:**

Patients with HIV infection should be tested for syphilis. Likewise, anyone with syphilis should be tested for HIV. The risk factors for HIV infections and syphilis overlap, and it is believed that the open sores of a syphilis infection makes HIV transmission more likely. All patients with either disease should be tested for the other.

**Prognosis:**

Syphilis is curable in its early stages, and its progress can be restrained in the later stages. Patients with primary, secondary, or early latent stages of syphilis can usually be completely cured with a single dose of penicillin. People in later stages may already have permanent damage, but more intensive penicillin treatment may prevent progression of the disease.

If left untreated, syphilis can cause serious complications many years after infection.

Damage to the nervous system, heart, and other organs can develop if syphilis remains untreated for several years. In the most severe cases, syphilis can eventually progress to paralysis, changes in mental function, and death.

**Follow-Up:**

All patients treated for syphilis should be examined by a doctor, and have their blood retested both six months and one year after the original infection. It is critical for you to return for follow-up tests to see if syphilis has been eradicated. If not treated properly, the disease can progress to neurosyphilis, which is very difficult to treat.

The following special groups need more frequent or longer follow-up:

People with HIV infection or other immune deficiency syndrome.

Those with any neurological manifestations, and those with tertiary syphilis or late latent syphilis

People who were treated with medications other than penicillin due to proven penicillin allergy

People who have had syphilis or any other sexually transmitted disease should re-evaluate their lifestyle and sexual practices to avoid further infections. People who have had syphilis presumably engage in behavior that puts them at risk for contracting other sexually transmitted diseases.