

# Syphilis

## Summary

Syphilis is a sexually transmitted infection (STI) that is passed through contact with a syphilis lesion (sore, chancre or rash). Outbreaks of syphilis have been reported in every major Canadian urban centre, particularly among men who have sex with men (MSM). In recent years, the number of new cases has risen dramatically.

Symptoms of early syphilis vary considerably—from a painless chancre, a sore or a rash, to a fever, headache or more serious symptoms. Sexually active people should have blood tests for syphilis at least once a year. If caught early, syphilis can be treated effectively. If left untreated, syphilis can become a serious chronic disease.

In HIV-positive people, syphilis can cause damage faster and be harder to treat than in HIV-negative people. People infected with both syphilis and HIV can also transmit HIV more easily.

## What is syphilis?

Syphilis is the name given to an infection caused by the bacteria *Treponema pallidum*, or *T. pallidum*. This disease can be spread when one person comes into contact with syphilis lesions (sores, chancres or rashes). For example, it can be passed through:

- wet kissing
- anal, oral or vaginal sexual contact
- sharing equipment for injecting, smoking or snorting drugs
- pregnancy or birth from an infected mother to her child

The germs that cause syphilis (called treponemes) can cause lesions, sores or ulcers on the genitals, rectum and mouth. These sores can be an entry point for HIV and other STIs to get inside the body. Once inside the body, treponemes can enter the lymphatic system or the bloodstream. In a matter of hours or days, treponemes can quickly spread throughout the body and reach the brain.

## Who is at risk for syphilis?

People living with HIV are at greater risk of acquiring syphilis than HIV-negative people. Both men and women can get syphilis but more cases have been reported among men than women. Most of the new cases reported have been in men who have sex with men.

## Symptoms

Many people with syphilis experience no symptoms (however, they can transmit syphilis and remain at risk for complications). Others experience a range of symptoms that can range from mild to severe. When untreated, syphilis can, in rare cases, be life-threatening.

### Primary syphilis

In the early stages of syphilis, a lesion (sore) can appear on or inside the penis, vagina, rectum or mouth. In people co-infected with HIV, multiple lesions may appear. Because the lesions may be painless and may develop in hidden locations, early-stage syphilis in both men and women can go unnoticed.

Lymph nodes in the groin may become swollen, usually within a week of the syphilitic lesion appearing. Although the lesion can heal within four to six weeks, lymph nodes may remain swollen for several months.

Still, early-stage syphilis can have minimal symptoms and may go unnoticed by affected people. Troublingly, treponemes have been found in the spinal fluid of people with primary syphilis, regardless of whether they are HIV-positive or -negative. This means that the germs that cause syphilis have penetrated the central nervous system and can attack the brain. When this occurs, neurosyphilis can develop.

### Secondary syphilis

At this stage, generally two to 12 weeks after the lesion appears, symptoms of widespread infection occur. Symptoms can vary considerably but the following are common:

- rash
- low-grade fever
- lack of energy
- sore throat
- lack of appetite

The rash can begin on the trunk but may also appear elsewhere, for example, on the palms of the hands and soles of the feet. If the rash affects a hairy area, temporary patchy hair loss can occur. For instance, thinning of the eyebrows, beard or parts of the head can be a feature of syphilitic rash.

Painless lesions, called mucous patches, can appear on the wet tissues of the genitals, mouth, throat and tonsils. These lesions are teeming with treponemes and are highly infectious.

In up to 40% of people with secondary syphilis, the brain and spinal cord (the central nervous system) can become infected, with or without symptoms. Some people may experience the following symptoms:

- ringing in the ears
- decreased ability to hear clearly
- difficulty seeing clearly
- headache

### Late syphilis (tertiary syphilis)

Without treatment, secondary syphilis turns into late syphilis (also called latent or tertiary syphilis). At this stage, no symptoms are present and the infection can only be detected with blood tests. However, the disease continues to cause damage.

At this stage of illness, any organ of the body may slowly become inflamed and affected by *T. pallidum*. Late syphilis can affect the nervous system (neurosyphilis, which can amplify HIV-related neurocognitive problems), the heart and blood vessels (cardiovascular syphilis), the liver (which can cause liver damage or hepatitis), the kidneys, eyes or just about any organ system.

If left untreated, late-stage syphilis can eventually lead to unpleasant complications, including:

- difficulty falling asleep
- problems with vision

- peripheral neuropathy (damage to the nerves of the peripheral nervous system)
- problems getting and maintaining an erection
- changes in personality
- poor memory
- decreased capacity for insight and good judgment
- meningitis
- poor control of muscles
- damaged joints
- seizures
- stroke

In rare cases, untreated syphilis can be life-threatening.

### Syphilis passed from mother to baby (congenital syphilis)

When a woman is infected with syphilis while pregnant, the disease can cause miscarriage, stillbirth or the death of a newborn. Most babies born with syphilis have no symptoms although some may have a rash. If the syphilis is not treated, babies can have developmental problems, seizures and other serious health issues.

### Diagnosis

Syphilis is commonly diagnosed using blood tests that detect antibodies to proteins unrelated to *T. pallidum* but which occur in cases of syphilis. Blood tests commonly used to help diagnose syphilis include the following:

- VDRL (venereal disease research laboratory)
- RPR (rapid plasma reagin)

In people with primary syphilis or latent syphilis, these indirect tests do not always work. If syphilis is suspected but the test produces a negative result, the Public Health Agency of Canada recommends that doctors repeat the test several weeks later and also

consider using tests that look specifically for antibodies to *T. pallidum*. These tests include:

- treponemal enzyme immunoassay (EIA)
- FTA-ABS
- MHA-TP

Because these tests cannot distinguish between live and dead treponemes, they are not routinely used. Moreover, these tests are only available at specialized laboratories. For more information about which tests are available in your region, contact your doctor or local laboratory.

In some cases, syphilis can also be diagnosed by swabbing an infectious chancre and examining the sample under a microscope.

Screening is recommended for sex partners who may have syphilis, men who have sex with men, injection drug users, sex workers and people who have had sex with people from endemic countries. Because untreated syphilis in a pregnant woman can infect and potentially harm her developing fetus or newborn, every pregnant woman should get tested.

Researchers in the Netherlands have suggested that routine assessment of blood for syphilis may be useful in HIV-positive MSM because syphilis can, at least initially, be symptom-free.

### Treatment

An antibiotic called **benzathine penicillin G** is considered the gold standard of anti-syphilis therapy. If syphilis is diagnosed within a year of infection, it can usually be treated with a single injection of this type of penicillin (a single dose of G 2.4 million units injected in muscle). It is important to note that this dose is inadequate for people with neurosyphilis. People who have had syphilis for more than a year need to take higher doses of the medication for longer.

Antibiotics such as **doxycycline** impair the growth of treponemes and are sometimes used in patients who are allergic to penicillin. Bear

in mind that unlike penicillin, doxycycline does not kill treponemes and may be less effective in people with severely weakened immune systems. For people who are allergic to penicillin and for pregnant women with syphilis, some experts prefer to desensitize their patients to penicillin. This involves giving people tiny but gradually increasing amounts of penicillin under close medical supervision, until they are able to tolerate a complete dose.

The antibiotic azithromycin (Zithromax) has also been used to treat syphilis; however, cases of syphilis resistant to azithromycin have been reported in Canada, the United States and Ireland, particularly among MSM. PHAC does not recommend the use of this antibiotic for the routine treatment of syphilis. Similarly, the antibiotic ceftriaxone is not recommended for routine treatment of syphilis in Canada.

### What about HIV infection?

The treatment of syphilis in people co-infected with HIV is controversial. Some physicians favour using the same therapy that would be used in HIV-negative people—a single intramuscular injection of benzathine penicillin. Others opt for more rigorous therapy for HIV-positive people, due to the following factors:

- There is a high risk of treponemes invading the brain, even in primary syphilis, so a single injection of penicillin may be inadequate.
- HIV-positive people are at high risk for neurological problems and neurosyphilis may increase this risk.
- HIV infection weakens the immune system and possibly its ability to control syphilis.
- Syphilis is a relatively common STI among sexually active MSM.

Such considerations have prompted some physicians to use benzathine penicillin, injected intramuscularly, once a week for three consecutive weeks, as treatment

in HIV-positive people for primary or secondary syphilis.

Alternatively, physicians may opt for the antibiotic doxycycline taken orally twice daily for two to four consecutive weeks. Although effective in early-stage syphilis, doxycycline has not been tested for late-stage syphilis. Some syphilis experts recommend desensitization to penicillin in patients with an allergy to penicillin, followed by penicillin treatment.

For neurosyphilis, regardless of a person's HIV infection status, PHAC recommends therapy with penicillin for 10 to 14 days.

PHAC has excellent guidelines (*Canadian Guidelines on Sexually Transmitted Infections*) for the management of patients with syphilis, including a penicillin desensitization plan, available at: [www.phac-aspc.gc.ca/std-mts/sti-its/guide-lignesdir-eng.php](http://www.phac-aspc.gc.ca/std-mts/sti-its/guide-lignesdir-eng.php)

### Sex after syphilis

It takes time for treponeme levels to decrease and for your body to recover from syphilis. Even though you may feel better after syphilis treatment, there may still be treponemes lurking in your body. Your doctor will order blood tests to let you know when your body has recovered and when it is safe for you to resume sexual activity.

### Prevention

To prevent the transmission of syphilis, you can:

- **Practice safer sex.**
  - Use latex condoms and/or dental dams for all sexual activities, including oral sex. (This does not eliminate the chance of transmission because a syphilis lesion may be in an area not covered by a condom or dental dam, but consistent use reduces the risk.)
  - Talk to your sex partners about their history of STIs.

- If you or your partner notices any unusual discharge, a sore or a rash, especially around the groin, avoid having sex and see your doctor as soon as possible.
- **Get tested and treated.**
  - Get tested regularly for syphilis. If you are a pregnant woman, get tested early on in your pregnancy.
  - If you test positive, treat the infection as soon as possible and notify your sex partner(s), so they can get tested too. It is important that the people you have had sex with know that they may have been exposed to syphilis; however, doing this is not always easy. So ask your doctor or nurse for a referral to your local public health department, which can discreetly inform your sexual partner(s) of their need for syphilis testing.
- **If you use drugs, avoid sharing drug equipment.**

For more information about syphilis and HIV, see “The story of syphilis” in *The Positive Side* magazine (Spring/Summer 2004).

#### Credits

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