



FACTSHEET

Syphilis

Summary

Outbreaks of syphilis have been reported in every major Canadian urban centre, particularly among men who have sex with men (MSM). Symptoms of early syphilis can vary considerably from a painless sore to rashes, fever, headache and more serious symptoms. Sexually active people should have blood tests for syphilis several times a year. If caught early, treatment for syphilis is very effective. In people co-infected with HIV, syphilis seems to cause damage faster than in HIV-negative people.

Transmission

Syphilis is the name given to a chronic infection caused by the germ *T. pallidum*. This disease can be spread in the following ways:

- Kissing;
- anal, oral or vaginal sexual contact;
- sharing needles and other equipment for substance use;
- from an infected mother to child during pregnancy or birth.

The germs that cause syphilis (called treponemes) can cause sores on the genitals, rectum and mouth. These sores can be an entry point for HIV and other sexually transmitted infections (STIs) to get inside the body. Once inside the body, treponemes, like HIV, can enter the lymphatic system or the blood stream. From there, in a matter of hours or a few days, treponemes can quickly spread throughout the body and reach the brain.

Primary syphilis

In the early stages of syphilis a sore can appear on the penis or in the rectum or, in women, on the cervix. In people co-infected with HIV, multiple sores can appear. Because the sores appear in hidden locations, early-stage syphilis might go unnoticed in both men and women.

Lymph nodes in the groin may become swollen, usually within a week of the appearance of the syphilitic sore. Although the sore, sometimes called a chancre, 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 HIV infection.

Secondary syphilis

In this stage, generally two to 12 weeks after the appearance of the chancre, symptoms of a widespread *T. pallidum* infection occur. Symptoms

can vary considerably but the following can be common:

- skin rash;
- low-grade fever;
- lack of energy;
- sore throat;
- lack of appetite.

The skin rash can begin on the trunk but may also appear anywhere else, including 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 (CNS—central nervous system) can become infected, with or without symptoms. In some cases, symptoms such as the following may appear:

- ringing in the ears;
- decrease in the ability to hear clearly;
- difficulty seeing clearly;
- headache.

If left untreated, neurosyphilis can develop, leading to severe complications.

The germs that cause syphilis can also infect the liver, causing liver damage or hepatitis, which can be detected by increased levels of liver enzymes in the blood.

Secondary syphilis can also turn into latent syphilis. At this stage, no symptoms are present and the infection is only detectable with blood tests. However, despite the lack of symptoms, the disease is still eating away at the body.

Late syphilis (tertiary syphilis)

In this stage of illness, any organ of the body may become slowly inflamed and affected by *T. pallidum*. Generally, late syphilis can affect the nervous system (neurosyphilis), the heart and blood vessels (cardiovascular syphilis) and just about any organ/system where a syphilitic lesion can appear. These lesions, which are usually solitary, are called gummas.

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

- difficulty falling asleep;
- peripheral neuropathy;
- 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.

Given all of these, regular blood tests for syphilis (and other STIs) are important for sexually active people who wish to remain healthy.

Testing

Different tests are available for assessing syphilis. For further information about which tests are available in your region, contact your local laboratory.

Blood tests commonly used to help diagnose syphilis include the following:

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

These two tests are indirect tests in that they detect antibodies produced against proteins unrelated to *T. pallidum* but that still occur in cases of syphilis. In people with primary syphilis or latent syphilis, these indirect tests may not always work. In such cases, where syphilis is suspected, the Public Health Agency of Canada (PHAC) recommends that doctors repeat the indirect test several weeks later and also consider the use of tests that specifically assess the presence of antibodies to *T. pallidum*. These tests include the treponemal enzyme immunoassay (EIA). Other tests that may be useful include FTA-ABS and MHA-TP.

PCR tests are not routinely used to detect *T. pallidum* and they cannot distinguish between live and dead treponemes. Moreover, PCR tests are only available at specialized laboratories, including Canada's National Microbiology Laboratory.

Recently, 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

Unlike the case with many other diseases, one syphilis expert, writing in an infectious disease textbook, noted that “there have not been many well-controlled, carefully planned, prospective studies to determine [the best dose or length] of therapy.” Current recommendations for treatment of syphilis are based on extrapolations of older data. Despite these drawbacks, an antibiotic called benzathine penicillin G is considered the gold standard of anti-syphilis therapy.

Drug levels

Ideally, maintaining high levels of penicillin in the blood should keep *T. pallidum* from reproducing and still higher levels can help kill these germs. So, for treating early syphilis, high levels of penicillin G are needed for at least

seven days. The most convenient way to achieve this while avoiding the issue of patient adherence is an injection of benzathine G penicillin into muscle. However, it is important to note that this dose is inadequate for neurosyphilis; indeed, levels of penicillin that can kill treponemes in the CNS are not reliably achieved with a single injection of benzathine penicillin G 2.4 million units. Yet, in cases of early diagnosis, where, in theory, there are fewer treponemes, the evidence shows that treatment with a single injection of penicillin is sufficient therapy for the average person with primary syphilis.

Other antibiotics

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. In cases of penicillin allergy, some experts prefer to desensitize their patients to penicillin—a course of action suggested by PHAC (Public Health Agency of Canada). Penicillin desensitization is also recommended for cases of syphilis in pregnant women.

Another potential treatment is the antibiotic azithromycin (Zithromax). However, reports have emerged of cases of syphilis resistant to azithromycin in the United States, Ireland and, recently, in the province of British Columbia. All of the BC cases of azithromycin-resistant syphilis were in MSM. PHAC does not recommend the use of this antibiotic for the routine treatment of syphilis.

Also, 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 are in favour of the same therapy that would be used in HIV-negative people—a single intramuscular

injection of benzathine penicillin G 2.4 million units. However, because of a number of factors, some doctors may opt for more rigorous therapy in HIV-positive people. These factors can include the following:

- There is a high risk of treponemes invading the brain, even in primary syphilis, and so a single injection of penicillin may be inadequate therapy in such cases.
- Syphilis can damage the brain.
- HIV-positive people are at high risk for neurological problems and neurosyphilis may add to this burden.
- 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 G 2.4 million units, injected intramuscularly, once weekly for three consecutive weeks as treatment in HIV-positive people for primary or secondary syphilis.

Alternatively, other physicians may opt for the antibiotic doxycycline 100 mg 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, so syphilis experts recommend desensitization to penicillin in patients with penicillin allergy, followed by penicillin therapy. Moreover, unlike penicillin, doxycycline does not kill treponemes.

For neurosyphilis, regardless of HIV infection status, PHAC recommends therapy with penicillin G 3 to 4 million units given intravenously every four hours each day (for a total of between 16 and 24 million units daily) for 10 to 14 days.

PHAC has excellent guidelines (updated in 2008) for the management of patients with syphilis, including a penicillin desensitization plan, available at:

http://www.phac-aspc.gc.ca/std-mts/sti_2006/pdf/510_Syphilis.pdf

Sex after syphilis

It takes time for levels of treponemes to decrease and for your body to recover from syphilis. Even though you may be feeling better after syphilis therapy, there may still be treponemes lurking in your body. Your doctor can order blood tests to let you know when your body has recovered and when it is safe for you to resume sexual activity. Having protected sex reduces your risk of catching syphilis again.

Helping friends

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 department of public health, which can discreetly inform your sexual partner(s) of their need for syphilis testing.

For further information about syphilis and HIV, see “The Story of Syphilis” in *The Positive Side* magazine (spring/summer 2004), available at: http://www.positiveside.ca/e/V6I4/Syphilis_e.htm

Credits

Author: Sean R. Hosein
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Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about HIV-related illness and the treatments in question.

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Contact CATIE

by telephone
1.800.263.1638
416.203.7122

by fax
416.203.8284

by e-mail
info@catie.ca

on the Web
www.catie.ca

by mail
505-555 Richmond Street West
Toronto ON M5V 3B1 Canada

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