

Sexually transmitted infections (STIs)

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Key facts

- More than 1 million sexually transmitted infections (STIs) are acquired every day worldwide.
- Each year, there are an estimated 357 million new infections with 1 of 4 STIs: chlamydia, gonorrhoea, syphilis and trichomoniasis.
- More than 500 million people are estimated to have genital infection with herpes simplex virus (HSV).
- More than 290 million women have a human papillomavirus (HPV) infection (1).
- The majority of STIs have no symptoms or only mild symptoms that may not be recognized as an STI.
- STIs such as HSV type 2 and syphilis can increase the risk of HIV acquisition.
- Over 900 000 pregnant women were infected with syphilis resulting in approximately 350 000 adverse birth outcomes including stillbirth in 2012 (2).
- In some cases, STIs can have serious reproductive health consequences beyond the immediate impact of the infection itself (e.g., infertility or mother-to-child transmission)
- Drug resistance, especially for gonorrhoea, is a major threat to reducing the impact of STIs worldwide.

More than 30 different bacteria, viruses and parasites are known to be transmitted through sexual contact. Eight of these pathogens are linked to the greatest incidence of sexually transmitted disease. Of these 8 infections, 4 are currently curable: syphilis, gonorrhoea, chlamydia and trichomoniasis. The other 4 are viral infections and are incurable: hepatitis B, herpes simplex virus (HSV or herpes), HIV, and human papillomavirus (HPV). Symptoms or disease due to the incurable viral infections can be reduced or modified through treatment.

STIs are spread predominantly by sexual contact, including vaginal, anal and oral sex. Some STIs can also be spread through non-sexual means such as via blood or blood products. Many STIs—including chlamydia, gonorrhoea, primarily hepatitis B, HIV, and syphilis—can also be transmitted from mother to child during pregnancy and childbirth.

A person can have an STI without having obvious symptoms of disease. Common symptoms of STIs include vaginal discharge, urethral discharge or burning in men, genital ulcers, and abdominal pain.

Scope of the problem

STIs have a profound impact on sexual and reproductive health worldwide.

More than 1 million STIs are acquired every day. Each year, there are estimated 357 million new infections with 1 of 4 STIs: chlamydia (131 million), gonorrhoea (78 million), syphilis (5.6 million) and trichomoniasis (143 million). More than 500 million people are living with genital HSV (herpes) infection. At any point in time, more than 290 million women have an HPV infection, one of the most common STIs.

STIs can have serious consequences beyond the immediate impact of the infection itself.

- STIs like herpes and syphilis can increase the risk of HIV acquisition three-fold or more.
- Mother-to-child transmission of STIs can result in stillbirth, neonatal death, low-birth-weight and prematurity, sepsis, pneumonia, neonatal conjunctivitis, and congenital deformities. Over 900 000 pregnant women were infected with syphilis resulting in approximately 350 000 adverse birth outcomes including stillbirth in 2012 (2).
- HPV infection causes 528 000 cases of cervical cancer and 266 000 cervical cancer deaths each year.
- STIs such as gonorrhoea and chlamydia are major causes of pelvic inflammatory disease (PID) and infertility in women.

Prevention of STIs

Counselling and behavioural approaches

Counselling and behavioural interventions offer primary prevention against STIs (including HIV), as well as against unintended pregnancies. These include:

- comprehensive sexuality education, STI and HIV pre- and post-test counselling;
- safer sex/risk-reduction counselling, condom promotion;
- interventions targeted at key populations, such as sex workers, men who have sex with men and people who inject drugs; and
- education and counselling tailored to the needs of adolescents.

In addition, counselling can improve people's ability to recognize the symptoms of STIs and increase the likelihood they will seek care or encourage a sexual partner to do so. Unfortunately, lack of public awareness, lack of training of health workers, and long-standing, widespread stigma around STIs remain barriers to greater and more effective use of these interventions.

Barrier methods

When used correctly and consistently, condoms offer one of the most effective methods of protection against STIs, including HIV. Female condoms are effective and safe, but are not used as widely by national programmes as male condoms.

Diagnosis of STIs

Accurate diagnostic tests for STIs are widely used in high-income countries. These are especially useful for the diagnosis of asymptomatic infections. However, in low- and middle-income countries, diagnostic tests are largely unavailable. Where testing is available, it is often expensive and geographically inaccessible; and patients often need to wait a long time (or need to return) to receive results. As a result, follow up can be impeded and care or treatment can be incomplete.

The only inexpensive, rapid tests currently available for STIs are for syphilis and HIV. The syphilis test is already in use in some resource-limited settings. The test is accurate, can provide results in 15 to 20 minutes, and is easy to use with minimal training. Rapid syphilis tests have been shown to increase the number of pregnant women tested for syphilis. However, increased efforts are still needed in most low- and middle-income countries to ensure that all pregnant women receive a syphilis test.

Several rapid tests for other STIs are under development and have the potential to improve STI diagnosis and treatment, especially in resource-limited settings.

Treatment of STIs

Effective treatment is currently available for several STIs.

- Three bacterial STIs (chlamydia, gonorrhoea and syphilis) and one parasitic STI (trichomoniasis) are generally curable with existing, effective single-dose regimens of antibiotics.
- For herpes and HIV, the most effective medications available are antivirals that can modulate the course of the disease, though they cannot cure the disease.
- For hepatitis B, immune system modulators (interferon) and antiviral medications can help to fight the virus and slow damage to the liver.

Resistance of STIs—in particular gonorrhoea—to antibiotics has increased rapidly in recent years and has reduced treatment options. The emergence of decreased susceptibility of gonorrhoea to the “last line” treatment option (oral and injectable cephalosporins) together with antimicrobial resistance already shown to penicillins, sulphonamides, tetracyclines, quinolones and macrolides make gonorrhoea a multidrug-resistant organism. Antimicrobial resistance for other STIs, though less common, also exists, making prevention and prompt treatment critical.

STI case management

Low- and middle-income countries rely on identifying consistent, easily recognizable signs and symptoms to guide treatment, without the use of laboratory tests. This is called syndromic management. This approach, which often relies on clinical algorithms, allows health workers to diagnose a specific infection on the basis of observed syndromes (e.g., vaginal discharge, urethral discharge, genital ulcers, abdominal pain).

Syndromic management is simple, assures rapid, same-day treatment, and avoids expensive or unavailable diagnostic tests. However, this approach misses infections that do not demonstrate any syndromes - the majority of STIs globally.

Vaccines and other biomedical interventions

Safe and highly effective vaccines are available for 2 STIs: hepatitis B and HPV. These vaccines have represented major advances in STI prevention. The vaccine against hepatitis B is included in infant immunization programmes in 93% of countries and has already prevented an estimated 1.3 million deaths from chronic liver disease and cancer.

HPV vaccine is available as part of routine immunization programmes in 65 countries, most of them high- and middle-income. HPV vaccination could prevent the deaths of more than 4 million women over the next decade in low- and middle-income countries, where most cases of cervical cancer occur, if 70% vaccination coverage can be achieved.

Research to develop vaccines against herpes and HIV is advanced, with several vaccine candidates in early clinical development. Research into vaccines for chlamydia, gonorrhoea, syphilis and trichomoniasis is in earlier stages of development.

Other biomedical interventions to prevent some STIs include adult male circumcision and microbicides.

- Male circumcision reduces the risk of heterosexually acquired HIV infection in men by approximately 60% and provides some protection against other STIs, such as herpes and HPV.
- Tenofovir gel, when used as a vaginal microbicide, has had mixed results in terms of the ability to prevent HIV acquisition, but has shown some effectiveness against HSV-2.

Current efforts to contain the spread of STIs are not sufficient

Behaviour change is complex

Despite considerable efforts to identify simple interventions that can reduce risky sexual behaviour, behaviour change remains a complex challenge. Research has demonstrated the need to focus on carefully defined populations, consult extensively with the identified target populations, and involve them in design, implementation and evaluation.

Health services for screening and treatment of STIs remain weak

People seeking screening and treatment for STIs face numerous problems. These include limited resources, stigmatization, poor quality of services, and little or no follow-up of sexual partners.

- In many countries, STI services are provided separately and not available in primary health care, family planning and other routine health services.
- In many settings, services are often unable to provide screening for asymptomatic infections, lacking trained personnel, laboratory capacity and adequate supplies of appropriate medicines.
- Marginalized populations with the highest rates of STIs—such as sex workers, men who have sex with men, people who inject drugs, prison inmates, mobile populations and adolescents—often do not have access to adequate health services.

WHO response

WHO develops global norms and standards for STI treatment and prevention, strengthens systems for surveillance and monitoring, including those for drug-resistant gonorrhoea, and leads the setting of the global research agenda on STIs.

Our work is currently guided by the "*Global health sector strategy on sexually transmitted infections, 2016 -2021*", adopted by the World Health Assembly in 2016 and the 2015 United Nations Global Strategy for Women's, Children's and Adolescents' Health, which highlight the need for a comprehensive, integrated package of essential interventions, including information and services for the prevention of HIV and other sexually transmitted infections. The Sixty-ninth World Health Assembly adopted 3 global health sector strategies for the period 2016-2021 on HIV, viral hepatitis and sexually transmitted infections (STIs).

- [Global health sector strategy on Sexually Transmitted Infections, 2016-2021](#)
- [Global health sector strategy on HIV, 2016-2021](#)
- [Global health sector strategy on viral hepatitis 2016-2021](#)

WHO works with countries to:

- Scale-up effective STI services including:
 - STI case management and counseling
 - syphilis testing and treatment, in particular for pregnant women
 - hepatitis B and HPV vaccination.
- Promote strategies to enhance STI-prevention impact including:
 - integrate STI services into existing health systems
 - promote sexual health
 - measure the burden of STIs
 - monitor and respond to STI antimicrobial resistance.
- Support the development of new technologies for STI prevention such as:
 - point-of care diagnostic tests for STIs
 - additional drugs for gonorrhoea

- STI vaccines and other biomedical interventions.

(1) [Worldwide prevalence and genotype distribution of cervical human papillomavirus DNA in women with normal cytology: a meta-analysis.](#)

de Sanjosé S, Diaz M, Castellsagué X, Clifford G, Bruni L, Muñoz N, et al. Lancet Infect Dis. 2007 Jul;7(7):453-9.

(2) [Global Estimates of Syphilis in Pregnancy and Associated Adverse Outcomes: Analysis of Multinational Antenatal Surveillance Data](#)

Newman L, Kamb M, Hawkes S, Gomez G, Say L, Seuc A, et al. PLoS Med 10(2): e1001396. doi:10.1371/journal.pmed.1001396

Related

- [The Global strategy for women's, children's and adolescents' health \(2016-2030\)](#)
- [WHO's work on sexually transmitted infections](#)
- [Global Health Observatory \(GHO\) data - Sexually Transmitted Infections \(STIs\)](#)
- [Global Health Sector Strategies for HIV/AIDS, Viral Hepatitis, Sexually Transmitted Infections \(STIs\)](#)