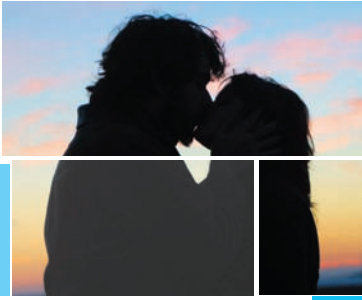


Sexually Transmitted Diseases



Despite the fact that over 19 million new cases of sexually transmitted diseases (STDs) occur each year in the United States, they are still one of the most under-recognized health problems in the country. STDs affect men and women of all background and economic levels. They are most prevalent among teenagers and young adults. Almost half of all STDs occur in people younger than 25 years of age. Most of the time, STDs cause no noticeable symptoms, particularly in women. Often times, if symptoms do occur, they may be confused with other conditions not related to a sexually transmitted disease. The most common symptoms that may occur include increased vaginal discharge, itching, burning, pain when urinating, and abdominal pain. If left untreated in women, they can often develop into infections of the fallopian tubes, pelvic inflammatory disease (PID), ectopic pregnancy and infertility. It is vital that during pregnancy, women be evaluated for the possibility of STDs. Some of the complications STDs can cause in pregnant women include spontaneous abortion, fetal death, prematurity, fetal distress and premature rupture of the membranes.

Chlamydia trachomatis

Chlamydia infection is caused by a bacteria called *Chlamydia trachomatis*, and is the most commonly reported infectious disease in the United States. It is estimated that 2.8 million people are infected each year. Chlamydia can be transmitted through vaginal, oral and anal sex. Symptoms of this infection can include an abnormal vaginal discharge of mucus or pus and abdominal pain. However, 75% of women have few or no symptoms and are unaware that they are infected. If left untreated, chlamydia can lead to an infection of the cervix, urethra, fallopian tubes, tubal pregnancy, infertility, endometritis and pelvic inflammatory disease (PID). Women, who deliver a baby while infected, may pass this bacteria on to the baby. Complications for the baby can include severe eye infections and pneumonia. Chlamydia infection can be treated and cured quickly with antibiotics.

Neisseria gonorrhoeae

Gonorrhea is caused by bacteria called *Neisseria gonorrhoeae*. It is the second most common sexually transmitted disease in the United States. It is estimated that 700,000 cases of gonorrhea occur each year. In women, most gonorrhea infections have no symptoms. This prevents many women from seeking treatment from their physician. Symptoms, when they do occur, include increased vaginal discharge, painful urination, abdominal pain and bleeding after sexual intercourse. The primary site of infection is the cervix, although it can be isolated from the vagina, urethra, rectum and throat. Possible complications include infection of the fallopian



tubes, tubo-ovarian abscesses, infertility and pelvic inflammatory disease (PID). In pregnant women, gonococcal infection can cause spontaneous abortion, fetal death, premature birth, fetal distress, and premature rupture of the membranes.

Screening Tests

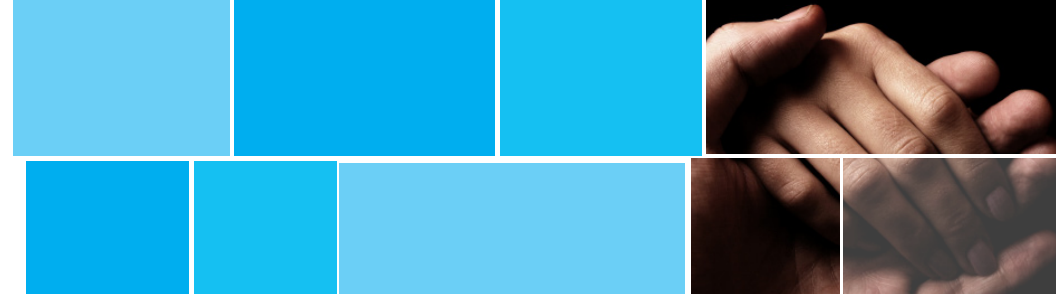
Due to the lack of symptoms in many infected individuals, it is very important that your physician performs screening tests to detect the presence of these infections. The Centers for Disease Control and Prevention (CDC) recommends that anyone who is tested for chlamydia also should be tested for gonorrhea. This recommendation was supported by a study in which 20% of men and 42% of women with gonorrhea also were found to be infected with *C. trachomatis*. If you are pregnant, your physician will routinely test you during your prenatal visits because of the risk involved to both mother and infant.

Vaginitis

Vaginitis is an inflammation of a woman's vagina. It is one of the most common reasons for gynecologic consultation consisting of approximately 10 million office visits annually. Bacterial vaginosis accounts for 40% to 50% of vaginitis cases; candidiasis, 20% to 25%; and trichomoniasis, 15% to 20%. Yeast infection is known as candidiasis and is caused by a fungus called *Candida*. It is found in small numbers in the normal vagina. However, when the normal balance of vaginal flora is changed, the yeast may overgrow and cause infection. The most frequent symptoms of a yeast infection are itching and burning of the vagina and vulva. The burning may be worse with urination or sex. The vulva may be red and swollen. The vaginal discharge is usually white and has no odor. It may look like cottage cheese. The bacteria that cause bacterial vaginosis occur naturally in the vagina. Bacterial vaginosis is caused by overgrowth of several of these bacteria. The main symptom is increased discharge with a strong fishy odor. The odor is stronger during your menstrual period or after sex. The discharge is thin and dark or dull gray. Itching is not common, but may be present if there is a lot of discharge. Some women may have no symptoms. Bacterial vaginosis often comes back and may require long-term or repeated treatment. Sometimes when bacterial vaginosis keeps coming back, it may mean you have another STD.

Trichomonas vaginalis

Trichomoniasis is caused by a tiny parasite known as *Trichomonas vaginalis*. It causes infections of the urinary and genital tracts in both men and women. In the United States, an estimated 7.4 million new cases occur each year in both men and

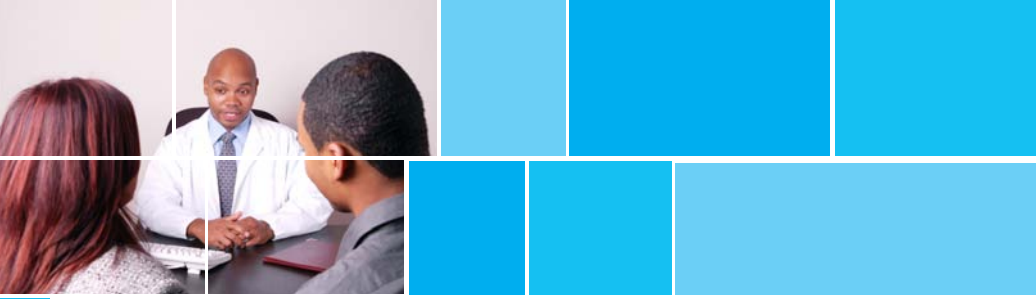


women. The vagina is the most common site of infection in women, and the urethra is the most common site of infection in men. The parasite is sexually transmitted through sexual intercourse or contact of the genital area outside the vagina with an infected partner. Women can acquire the disease from infected men or women, but men usually contract it only from infected women. It can also be passed to a newborn via the birth canal of an infected mother. The most common symptoms include a vaginal discharge, which is often yellowish-green in color, soreness, itching and inflammation in and around the vagina, the frequent need to urinate, painful urination and pain when having sex.

Mycoplasma & Ureaplasma

Mycoplasma and Ureaplasma are the smallest free-living bacteria. There are three species that cause genital tract infections in humans, *Mycoplasma genitalium*, *Mycoplasma hominis* and *Ureaplasma urealyticum*.

Clinical Significance	Mycoplasma	Ureaplasma
Vaginitis - Inflammation of the vagina	X	
Bacterial Vaginosis (BV) - Chronic inflammation of the vagina caused by bacteria	X	
Cervicitis - Acute or chronic inflammation of the cervix	X	
Pelvic Inflammatory Disease (PID) - Any inflammatory condition of the pelvic organs, especially those caused by bacteria	X	X
Salpingitis - Infection or inflammation of the fallopian tubes	X	
Post-abortion fever - Fever following an abortion procedure	X	
Post-partum fever - Fever following a normal vaginal delivery	X	X
Infertility	X	
Reduced sperm motility	X	
Repeated spontaneous abortion	X	X
Stillbirth	X	X
Premature Delivery	X	X
Chorioamnionitis - An inflammatory reaction of the amniotic membranes caused by bacteria or viruses in the amniotic fluid		X
Low birth weight	X	X
Non-gonococcal urethritis (NGU) - An infectious condition of the urethra of males characterized by painful urination and penile discharge	X	



Infants can become infected with *Mycoplasma* and *Ureaplasma* at birth by passing through the birth canal of a woman infected with the bacteria. They are frequently transmitted from mothers to their infants, and this may cause various diseases which include pneumonia, persistent pulmonary hypertension and chronic infection of the central nervous system.

Human Papillomavirus (HPV)

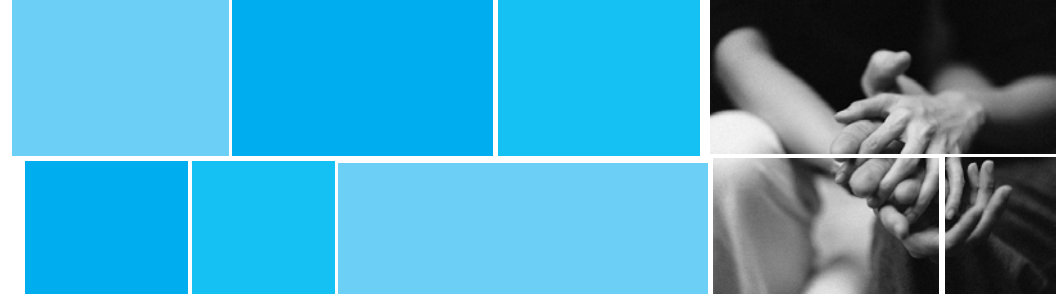
HPV, or human papillomavirus, is widespread throughout the population with over 20 million Americans currently infected with HPV and more than 6.2 million becoming newly infected each year. It is estimated that more than 70% of the population has an HPV infection. Anyone who is sexually active is at risk for contracting HPV infection. HPV can cause genital warts and has been associated with cervical cancer in women. Genital warts usually appear as small, hard painless bumps on the vulva, vagina, cervix, penis or anus. If left untreated, they may grow and develop a fleshy, cauliflower-like appearance. Infections can range from a single wart to a cluster of many warts. Although they may be painless, some itching, burning or bleeding may occur.

Most people who become infected with HPV do not even know they have it. Many patients do not have symptoms and it is often only during microscopic examination of exfoliated cells such as the Papanicolaou test (Pap Smear), that HPV infection is detected. The majority of HPV positives are considered “low risk” and can disappear within 8 months of infection. Low risk subtypes of the virus reproduce outside of the infected person’s chromosomes. High risk subtypes, on the other hand, incorporate into a person’s chromosomes and persist indefinitely. Less than 2% of those infected with HPV will develop genital tract cancers, including cervical cancer.

Herpes simplex virus (HSV)

Genital herpes is caused by the herpes simplex virus and affects an estimated 45 million Americans with over 1/2 million new cases occurring each year. One out of four women are infected with herpes and it is common in all regions of the United States, both rural and urban areas. However, 80% of those individuals infected are unaware they have herpes.

Symptoms can include rash, bumps, painful blisters, open sores in the genital area, itching, burning, tingling, swelling, pain in or around the genital area, discharge, and burning or pain during urination. The sores usually disappear within 2-3 weeks.



However, outbreaks do reoccur. Genital herpes will go undiagnosed because patients may attribute their symptoms to other causes such as yeast infections, urinary tract infections or a rash from irritation. Although this infection is not curable, outbreaks and symptoms can be controlled with medication.

It is important to identify herpes infections in women who are pregnant or those who are considering pregnancy. Women who acquire genital herpes during pregnancy can transmit the virus to their babies. If left untreated, HSV infection in newborns can result in mental retardation and even death.

Syphilis (*Treponema pallidum*)

Syphilis is a sexually transmitted disease caused by the bacteria *Treponema pallidum*. It is estimated that there are over 36,000 cases of syphilis reported in the United States each year. Syphilis progresses in four stages – primary, secondary, latent, and tertiary (late). The initial symptom, which is called a chancre, is a painless open sore that usually appears around the vagina. It can also occur near the mouth, anus, or on the hands. Because the chancre may be painless and may occur inside the body, it may often go unnoticed. The chancre disappears within a few weeks whether treated or not. Syphilis can be transmitted during vaginal, anal or oral sex.

Without treatment syphilis progresses to the second stage which consists of flu-like symptoms, anorexia, swelling of the lymph nodes, and a generalized rash of the mucus membranes and skin. This rash usually appears as brown sores, roughly the size of a penny. The palms of the hands and soles of the feet are almost always covered with the rash. The rash is infectious, so any physical contact with the broken skin of an infected person may spread the infection. If left untreated, syphilis may lapse into a latent stage during which the disease is no longer contagious and no symptoms are present. Late syphilis can cause the destruction of virtually any organ or tissue including the heart, eyes, brain, nervous system, bones, and joints.

If a pregnant woman is not treated for active syphilis, it is likely she will pass the infection to the unborn child. Approximately 25% of these pregnancies result in stillbirth or neonatal death. Between 40% and 70% of such pregnancies will yield a syphilis-infected infant. An infected baby may be born without signs or symptoms of disease. However, if not treated immediately, the baby may develop serious problems within a few weeks. Untreated babies may become developmentally delayed, have seizures or die.



***Haemophilus ducreyi* (Chancroid)**

Chancroid is an infection of the genitals that is caused by the bacterium *Haemophilus ducreyi*. It is spread by sexual contact with an infected individual. It is most commonly diagnosed in males, probably due to the asymptomatic or unapparent infection that often occurs in females.

It typically takes 5-7 days after exposure for symptoms to present, but could take as long as several weeks. The first sign of infection is usually the appearance of one or more sores or raised bumps on the genital organs. They are surrounded by a narrow red border which soon becomes filled with pus and eventually ruptures, leaving a painful open sore within 2 days. In about 50% of cases that are left untreated, the chancroid bacteria infects the lymph glands in the groin which becomes enlarged, hard and painful. The result is a rounded painful swelling which may eventually rupture.

Lymphogranuloma venereum (LGV)

Lymphogranuloma venereum (LGV) is a sexually transmitted infection caused by certain strains of the bacteria *Chlamydia trachomatis*, which causes chlamydia. The symptoms of LGV depend on the site of entry of the bacteria during sexual contact and the stage of disease progression. Contact with the external sex organs (penis and vagina) can lead to the inguinal syndrome, named after the formation of buboes or abscesses in the groin region where draining lymph nodes are located. The rectal syndrome arises if the infection takes place via the rectum, through anal sex, and is mainly characterized by inflammation of the rectum and colon. The pharyngeal syndrome is rare and starts after infection of the throat with buboes or abscesses in the neck region. Genital lesions caused by LGV can be mistaken for other ulcerative STDs such as syphilis, genital herpes and chancroid. Complications of untreated LGV may include enlargement and ulcerations of the external genitalia and lymphatic obstruction, which may lead to elephantiasis of the genitalia.



Protect yourself against STDs ...

The most important thing you can do to protect yourself from STDs is to remember this:

STDs can be prevented...

Limit the number of sexual partners...

Your risk of getting STDs increases with the number of sexual partners. By having sex with only one partner, who in turn has sex with only you, you will lower your risk.

Know your partner...

Ask about your partner's sexual history and whether he or she has had STDs. Your partner's sexual history can place you at risk. Even if your partner has no symptoms, he or she may still be infected and can pass on an infection to you during sex. It is difficult to be sure you are safe. It is up to you to protect yourself.

Use a condom...

Both male and female condoms are sold over the counter in drug stores. Neither is 100% foolproof, but they do offer protection against STDs. For the best protection against STDs, use a condom every time you have sex.

If you think you may be at risk, get tested...

In this case, what you don't know can hurt you. If you have had sexual contact with someone who may be at risk for STDs, see your doctor. These diseases will do the least harm to your health if they are caught early. Getting prompt treatment and protecting yourself against re-infection are the best ways to take care of your health.

You should ask your health care provider to test for STDs if:

- You find sores in your mouth or genital area.
- You are experiencing pain, burning or the presence of blood during sexual intercourse or urination.
- You have a vaginal discharge that has an unusual color, odor or amount.
- You have had any intimate contact with someone that you suspect has a STD.
- Your health care provider will help you take the right steps to identify and treat the infection.

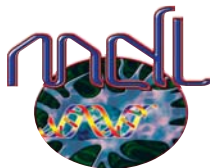


How Do You Find Out If You Have Any Sexually Transmitted Diseases?

Most STDs are easily treated. The earlier a person seeks treatment and warns sex partners about their condition, the less likely the disease will cause irreparable physical damage, be spread to others, or in the case of a woman, be passed on to a newborn baby. The severe complications and incurable nature of certain STDs warrant the use of the most reliable and accurate testing on the market.

Polymerase Chain Reaction (PCR) is a test method that can amplify DNA sequences, which are specific for each organism. Once infected, the body fluids become contaminated with the pathogen's DNA. By using this highly-sensitive PCR method, we can isolate and amplify the DNA of specific organisms to better aid your physician in identifying and treating these disorders.

Medical Diagnostic Laboratories, L.L.C. (MDL) specializes in this advanced technology. MDL has developed a series of **DNA-based** diagnostic tests for detection of certain STDs including *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, Herpes simplex virus (HSV), Human Papillomavirus (HPV), *Mycoplasma genitalium*, *Mycoplasma hominis*, *Lymphogranuloma venereum*, *Ureaplasma urealyticum*, *Treponema pallidum*, *Haemophilus ducreyi*, *Trichomonas vaginalis*, bacterial vaginosis and candida vaginitis. Testing for STDs is simple with MDL's **OneSwab**[®]. Your physician can test for one or all of these pathogens from a single swab. Ask your physician today how you can find out if you are infected with any of these STDs.



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