

# Trichomoniasis

## What is trichomoniasis?

Trichomoniasis is a common sexually transmitted disease (STD) that affects both women and men, although symptoms are more common in women.

### ■ How common is trichomoniasis?

Trichomoniasis is the most common curable STD in young, sexually active women. An estimated 7.4 million new cases occur each year in women and men.

### ■ How do people get trichomoniasis?

Trichomoniasis is caused by the single-celled protozoan parasite, *Trichomonas vaginalis*. The vagina is the most common site of infection in women, and the urethra (urine canal) is the most common site of infection in men.

The parasite is sexually transmitted through penis-to-vagina intercourse or vulva-to-vulva (the genital area outside the vagina) contact with an infected partner. Women can acquire the disease from infected men or women, but men usually contract it only from infected women.

### ■ What are the signs and symptoms?

Most men with trichomoniasis do not have signs or symptoms; however, some men may temporarily have an irritation inside the penis, mild discharge, or slight burning after urination or ejaculation.

Some women have signs or symptoms of infection which include a frothy, yellow-green vaginal discharge with a strong odor. The infection also may cause discomfort during intercourse and urination, as well as irritation and itching of the female genital area. In rare cases, lower abdominal pain can occur. Symptoms usually appear in women within 5 to 28 days of exposure.

### ■ What are the complications of trichomoniasis?

The genital inflammation caused by trichomoniasis can increase a woman's susceptibility to HIV infection if she is exposed to the virus. Having trichomoniasis may increase the chance that an HIV-infected woman passes HIV to her sex partner(s).

### ■ How does trichomoniasis affect a pregnant woman and her baby?

Pregnant women with trichomoniasis may have babies who are born early or with low birth weight (low birth weight is less than 5.5 pounds).

### ■ How is trichomoniasis diagnosed?

For both men and women, a health care provider must perform a physical examination and laboratory test to diagnose trichomoniasis. The parasite is harder to detect in men than in women. In women, a pelvic examination can reveal small red ulcerations (sores) on the vaginal wall or cervix.

### ■ What is the treatment for trichomoniasis?

Trichomoniasis can usually be cured with prescription drugs, either metronidazole or tinidazole, given by mouth in a single dose. The symptoms of trichomoniasis in infected men may disappear within a few weeks without treatment. However, an infected man, even a man who has never had symptoms or whose symptoms have stopped, can continue to infect or re-infect a female partner until he has been treated. Therefore, both partners should be treated at the

same time to eliminate the parasite. Persons being treated for trichomoniasis should avoid sex until they and their sex partners complete treatment and have no symptoms. Metronidazole can be used by pregnant women.

Having trichomoniasis once does not protect a person from getting it again. Following successful treatment, people can still be susceptible to re-infection.

### ■ How can trichomoniasis be prevented?

The surest way to avoid transmission of sexually transmitted diseases is to abstain from sexual contact, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected.

Latex male condoms, when used consistently and correctly, can reduce the risk of transmission of trichomoniasis.

Any genital symptom such as discharge or burning during urination or an unusual sore or rash should be a signal to stop having sex and to consult a health care provider immediately. A person diagnosed with trichomoniasis (or any other STD) should receive treatment and should notify all recent sex partners so that they can see a health care provider and be treated. This reduces  
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the risk that the sex partners will develop complications from trichomoniasis and reduces the risk that the person with trichomoniasis will become re-infected. Sex should be stopped until the person with trichomoniasis and all of his or her recent partners complete treatment for trichomoniasis and have no symptoms.

**CONTENT UPDATED:** DECEMBER, 2007

# Syphilis

## What is syphilis?

Syphilis is a sexually transmitted disease (STD) caused by the bacterium *Treponema pallidum*. It has often been called “the great imitator” because so many of the signs and symptoms are indistinguishable from those of other diseases.

### ■ How common is syphilis?

In the United States, health officials reported over 36,000 cases of syphilis in 2006, including 9,756 cases of primary and secondary (P&S) syphilis. In 2006, half of all P&S syphilis cases were reported from 20 counties and 2 cities; and most P&S syphilis cases occurred in persons 20 to 39 years of age. The incidence of P&S syphilis was highest in women 20 to 24 years of age and in men 35 to 39 years of age. Reported cases of congenital syphilis in newborns increased from 2005 to 2006, with 339 new cases reported in 2005 compared to 349 cases in 2006.

Between 2005 and 2006, the number of reported P&S syphilis cases increased 11.8 percent. P&S rates have increased in males each year between 2000 and 2006 from 2.6 to 5.7 and among females between 2004 and 2006. In 2006, 64% of the reported P&S syphilis cases were among men who have sex with men (MSM).

### ■ How do people get syphilis?

Syphilis is passed from person to person through direct contact with a syphilis sore. Sores occur mainly on the external genitals, vagina, anus, or in the rectum. Sores also can occur on the lips and in the mouth. Transmission of the organism occurs during vaginal, anal, or oral sex. Pregnant women with the disease can pass it to the babies they are carrying. Syphilis cannot be spread through contact with toilet seats, doorknobs, swimming pools, hot tubs, bathtubs, shared clothing, or eating utensils.

■ **What are the signs and symptoms?** Many people infected with syphilis do not have any symptoms for years, yet remain at risk for late complications if they are not treated. Although transmission occurs from persons with sores who are in the primary or secondary stage, many of these sores are unrecognized. Thus, transmission may occur from persons who are unaware of their infection.

**Primary Stage:** The primary stage of syphilis is usually marked by the appearance of a single sore (called a chancre), but there may be multiple sores. The time between infection with syphilis and the start of the first symptom can range from 10 to 90 days (average 21 days). The chancre is usually firm, round, small, and painless. It appears at the spot where syphilis entered the body. The chancre lasts 3 to 6 weeks, and it heals without treatment. However, if adequate treatment is not administered, the infection progresses to the secondary stage.

**Secondary Stage:** Skin rash and mucous membrane lesions characterize the secondary stage. This stage typically starts with the development of a rash on one or more areas of the body. The rash usually does not cause itching. Rashes associated with secondary syphilis can appear as the chancre is healing or several weeks after the chancre has healed. The characteristic rash of secondary syphilis may appear as rough, red, or reddish brown spots both on the palms of the hands and the bottoms of the feet. However, rashes with a different appearance may occur on other parts of the body, sometimes resembling rashes caused by other diseases. Sometimes rashes associated with secondary syphilis are so faint that they are not noticed. In addition to rashes, symptoms of secondary syphilis may include fever, swollen lymph glands, sore throat, patchy hair loss, headaches, weight loss, muscle aches, and fatigue. The signs and symptoms of secondary syphilis will resolve with or without treatment, but without treatment, the infection will progress to the latent and possibly late stages of disease.

**Late and Latent Stages:** The latent (hidden) stage of syphilis begins when primary and secondary symptoms disappear. Without treatment, the infected person will continue to have syphilis even though there are no signs or symptoms; infection remains in the body. This latent stage can last for years. The late stages of syphilis can develop in about 15% of people who have not been treated for syphilis,

and can appear 10–20 years after infection was first acquired. In the late stages of syphilis, the disease may subsequently damage the internal organs, including the brain, nerves, eyes, heart, blood vessels, liver, bones, and joints. Signs and symptoms of the late stage of syphilis include difficulty coordinating muscle movements, paralysis, numbness, gradual blindness, and dementia. This damage may be serious enough to cause death.

### ■ How does syphilis affect a pregnant woman and her baby?

The syphilis bacterium can infect the baby of a woman during her pregnancy. Depending on how long a pregnant woman has been infected, she may have a high risk of having a stillbirth (a baby born dead) or of giving birth to a baby who dies shortly after birth. 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.

### ■ How is syphilis diagnosed?

Some health care providers can diagnose syphilis by examining material from a chancre (infectious sore) using a special microscope called a dark-field microscope. If syphilis bacteria are present in the sore, they will show up when observed through the microscope. A blood test is another way to determine whether someone has syphilis. Shortly after infection occurs, the body produces syphilis antibodies that can be detected by an accurate, safe, and inexpensive blood test. A low level of antibodies will likely stay in the blood for months or years even after the disease has been successfully treated. Because untreated syphilis in a pregnant woman can infect and possibly kill her developing baby, every pregnant woman should have a blood test for syphilis.

### ■ How are syphilis and HIV linked?

Genital sores (chancres) caused by syphilis make it easier to transmit and acquire HIV infection sexually. There is an estimated 2- to 5-fold increased risk of acquiring HIV if exposed to that infection when syphilis is present.

Ulcerative STDs that cause sores, ulcers, or breaks in the skin or mucous membranes, such as syphilis, disrupt barriers that provide protection against infections. The genital ulcers caused by syphilis can bleed easily, and when they come into contact with oral and rectal mucosa during sex, increase the infectiousness of and susceptibility to HIV. Having other STDs is also an important predictor for becoming HIV infected because STDs are a marker for behaviors associated with HIV transmission.

### ■ What is the treatment for syphilis?

Syphilis is easy to cure in its early stages. A single intramuscular injection of penicillin, an antibiotic, will cure a person who has had syphilis for less than a year. Additional doses are needed to treat someone who has had syphilis for longer than a year. For people who are allergic to penicillin, other antibiotics are available to treat syphilis. There are no home remedies or over-the-counter drugs that will cure syphilis. Treatment will kill the syphilis bacterium and prevent further damage, but it will not repair damage already done.

Because effective treatment is available, it is important that persons be screened for syphilis on an on-going basis if their sexual behaviors put them at risk for STDs.

Persons who receive syphilis treatment must abstain from sexual contact with new partners until the syphilis sores are completely healed. Persons with syphilis must notify their sex partners so that they also can be tested and receive treatment if necessary.

### ■ Will syphilis recur?

Having syphilis once does not protect a person from getting it again. Following successful treatment, people can still be susceptible to re-infection. Only laboratory tests can confirm whether someone has syphilis. Because syphilis sores can be hidden in the vagina, rectum, or mouth, it may not be obvious that a sex partner has syphilis. Talking with a health care provider will help to determine the need to be re-tested for syphilis after being treated.

### ■ How can syphilis be prevented?

The surest way to avoid transmission of sexually transmitted diseases, including syphilis, is to abstain from sexual contact or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected.

Avoiding alcohol and drug use may also help prevent transmission of syphilis because these activities may lead to risky sexual behavior. It is important that sex partners talk to each other about their HIV status and history of other STDs so that preventive action can be taken. Genital ulcer diseases, like syphilis, can occur in both male and female genital areas that are covered or protected by a latex condom, as well as in areas that are not covered. Correct and consistent use of latex condoms can reduce the risk of syphilis, as well as genital herpes and chancroid, only when the infected area or site of potential exposure is protected.

Condoms lubricated with spermicides (especially Nonoxyol-9 or N-9) are no more effective than other lubricated condoms in protecting against the transmission of STDs. Use of condoms lubricated with N-9 is not recommended for STD/HIV prevention. Transmission of an STD, including syphilis cannot be prevented by washing the genitals, urinating, and/or douching after sex. Any unusual discharge, sore, or rash, particularly in the groin area, should be a signal to refrain from having sex and to see a doctor immediately.

# Syphilis & MSM

(Men Who Have Sex With Men)

## What is syphilis?

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■ **What are the signs and symptoms?** Many people infected with syphilis do not have any symptoms for years, yet remain at risk for late complications if they are not treated. Although transmission occurs from persons with sores who are in the primary or secondary stage, many of these sores are unrecognized. Thus, transmission may occur from persons who are unaware of their infection.

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and can appear 10-20 years after infection was first acquired. In the late stages of syphilis, the disease may damage the internal organs, including the brain, nerves, eyes, heart, blood vessels, liver, bones, and joints. Signs and symptoms of the late stage of syphilis include difficulty coordinating muscle movements, paralysis, numbness, gradual blindness, and dementia. This damage may be serious enough to cause death.

### ■ Why should MSM be concerned?

Over the past several years, increases in syphilis among MSM have been reported in various cities and areas, including Chicago, Seattle, San Francisco, Southern California, Miami, and New York City. In the recent outbreaks, high rates of HIV co-infection were documented, ranging from 20 percent to 70 percent. While the health problems caused by syphilis in adults are serious in their own right, it is now known that the genital sores caused by syphilis in adults also make it easier to transmit and acquire HIV infection sexually.

### ■ How is syphilis diagnosed?

Some health care providers can diagnose syphilis by examining material from a chancre (infectious sore) using a special microscope called a dark-field microscope. If syphilis bacteria are present in the sore, they will show up when observed through the microscope.

A blood test is another way to determine whether someone has syphilis. Shortly after infection occurs, the body produces syphilis antibodies that can be detected by an accurate, safe, and inexpensive blood test. A low level of antibodies will likely stay in the blood for months or years even after the disease has been successfully treated.

### ■ How are syphilis and HIV linked?

Genital sores (chancres) caused by syphilis make it easier to transmit and acquire HIV infection sexually. There is an estimated 2- to 5-fold increased risk of acquiring HIV if exposed to that infection when syphilis is present.

Ulcerative STDs that cause sores, ulcers, or breaks in the skin or mucous membranes, such as syphilis, disrupt barriers that provide protection against infections. The genital ulcers caused by syphilis can bleed easily, and when they come into contact with oral and rectal mucosa during sex, increase the infectiousness of and susceptibility to HIV. Having other STDs is also an important predictor for becoming HIV infected because STDs are a marker for behaviors associated with HIV transmission.

### ■ What is the treatment for syphilis?

Syphilis is easy to cure in its early stages. A single intramuscular injection of penicillin, an antibiotic, will cure a person who has had syphilis for less than a year. Additional doses are needed to treat someone who has had syphilis for longer than a year. For people who are allergic to penicillin, other antibiotics are available to treat syphilis. There are no home remedies or over-

the-counter drugs that will cure syphilis. Treatment will kill the syphilis bacterium and prevent further damage, but it will not repair damage already done.

Because effective treatment is available, it is important that persons be screened for syphilis on an on-going basis if their sexual behaviors put them at risk for STDs.

Persons who receive syphilis treatment must abstain from sexual contact with new partners until the syphilis sores are completely healed. Persons with syphilis must notify their sex partners so that they also can be tested and receive treatment if necessary.

### ■ Will syphilis recur?

Having syphilis once does not protect a person from getting it again. Following successful treatment, people can still be susceptible to re-infection. Only laboratory tests can confirm whether someone has syphilis. Because syphilis sores can be hidden in the vagina, rectum, or mouth, it may not be obvious that a sex partner has syphilis. Talking with a health care provider will help to determine the need to be re-tested for syphilis after being treated.

### ■ How can syphilis be prevented?

The surest way to avoid transmission of sexually transmitted diseases, including syphilis, is to abstain from sexual contact or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected. Avoiding alcohol and drug use may also help prevent transmission of syphilis because these activities may lead to risky sexual behavior. It is important that sex partners talk to each other about their HIV status and history of other STDs so that preventive action can be taken.

Genital ulcer diseases, like syphilis, can occur in both male and female genital areas that are covered or protected by a latex condom, as well as in areas that are not covered. Correct and consistent use of latex condoms can reduce the risk of syphilis, as well as genital herpes and chancroid, only when the infected area or site of potential exposure is protected.

Condoms lubricated with spermicides (especially Nonoxynol-9 or N-9) are no more effective than other lubricated condoms in protecting against the transmission of STDs. Use of condoms lubricated with N-9 is not recommended for STD/HIV prevention. Transmission of an STD, including syphilis cannot be prevented by washing the genitals, urinating, and or douching after sex. Any unusual discharge, sore, or rash, particularly in the groin area, should be a signal to refrain from having sex and to see a doctor immediately.

The CDC's 2006 Sexually Transmitted Disease Treatment Guidelines recommend that MSM who are at risk for STDs be tested for syphilis annually.

# STDs & Pregnancy

## Can pregnant women become infected with STDs?

Yes, women who are pregnant can become infected with the same sexually transmitted diseases (STDs) as women who are not pregnant. Pregnancy does not provide women or their babies any protection against STDs. The consequences of an STD can be significantly more serious, even life threatening, for a woman and her baby if the woman becomes infected with an STD while pregnant. It is important that women be aware of the harmful effects of STDs and know how to protect themselves and their children against infection.

## ■ How common are STDs in pregnant women in the United States?

Some STDs, such as genital herpes and bacterial vaginosis, are quite common in pregnant women in the United States. Other STDs, notably HIV and syphilis, are much less common in pregnant women. The table below shows the estimated number of pregnant women in the United States who are infected with specific STDs each year.

### Estimated Number

#### STDs of Pregnant Women

Bacterial vaginosis.....	1,080,000
Herpes simplex virus 2.....	880,000
Chlamydia.....	100,000
Trichomoniasis.....	124,000
Gonorrhea.....	13,200
Hepatitis B.....	16,000
HIV.....	6,400
Syphilis.....	<1,000

## ■ How do STDs affect a pregnant woman and her baby?

STDs can have many of the same consequences for pregnant women as women who are not pregnant. STDs can cause cervical and other cancers, chronic hepatitis, pelvic inflammatory disease, infertility, and other complications. Many STDs in women are silent; that is, without signs or symptoms.

STDs can be passed from a pregnant woman to the baby before, during, or after the baby's birth. Some STDs (like syphilis) cross the placenta and infect the baby while it is in the uterus (womb). Other STDs (like gonorrhea, chlamydia, hepatitis B, and genital herpes) can be transmitted from the mother to the baby during delivery as the baby passes through the birth canal. HIV can cross the placenta during pregnancy, infect the baby during the birth process, and unlike most other STDs, can infect the baby through breastfeeding.

A pregnant woman with an STD may also have early onset of labor, premature rupture of the membranes surrounding the baby in the uterus, and uterine infection after delivery.

The harmful effects of STDs in babies may include stillbirth (a baby that is born dead), low birth weight (less than five pounds), conjunctivitis (eye infection), pneumonia, neonatal sepsis (infection in the baby's blood stream), neurologic damage, blindness, deafness, acute hepatitis, meningitis, chronic liver disease, and cirrhosis. Most of these problems can be prevented if the mother receives routine prenatal care, which includes screening tests for STDs starting early in pregnancy and repeated close to delivery, if necessary. Other problems can be treated if the infection is found at birth.

## ■ Should pregnant women be tested for STDs?

Yes, STDs affect women of every socioeconomic and educational level, age, race, ethnicity, and religion. The CDC 2006 Guidelines for Treatment of Sexually Transmitted Diseases recommend that pregnant women be screened on their first prenatal visit for STDs which may include:

- Chlamydia
- Gonorrhea
- Hepatitis B
- HIV
- Syphilis

In addition, some experts recommend that women who have had a premature delivery in the past be screened and treated for bacterial vaginosis at the first prenatal visit.

Pregnant women should ask their doctors about getting tested for these STDs, since some doctors do not routinely perform these tests. New and increasingly accurate tests continue to become available. Even if a woman has been tested in the past, she should be tested again when she becomes pregnant.

## ■ Can STDs be treated during pregnancy?

Chlamydia, gonorrhea, syphilis, trichomoniasis, and bacterial vaginosis (BV) can be treated and cured with antibiotics during pregnancy. There is no cure for viral STDs, such as genital herpes and HIV, but antiviral medication may be appropriate for

pregnant women with herpes and definitely is for those with HIV. For women who have active genital herpes lesions at the time of delivery, a cesarean delivery (C-section) may be performed to protect the newborn against infection. C-section is also an option for some HIV-infected women. Women who test negative for hepatitis B, may receive the hepatitis B vaccine during pregnancy.

## ■ How can pregnant women protect themselves against infection?

The surest way to avoid transmission of sexually transmitted diseases is to abstain from sexual contact, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected.

Latex condoms, when used consistently and correctly, are highly effective in preventing transmission of HIV, the virus that causes AIDS. Latex condoms, when used consistently and correctly, can reduce the risk of transmission of gonorrhea, chlamydia, and trichomoniasis. Correct and consistent use of latex condoms can reduce the risk of genital herpes, syphilis, and chancroid only when the infected area or site of potential exposure is protected by the condom. Correct and consistent use of latex condoms may reduce the risk for genital human papillomavirus (HPV) and associated diseases (e.g. warts and cervical cancer).



# The Role of STD Prevention and Treatment in HIV Prevention

Testing and treatment of sexually transmitted diseases (STDs) can be an effective tool in preventing the spread of HIV, the virus that causes AIDS. An understanding of the relationship between STDs and HIV infection can help in the development of effective HIV prevention programs for persons with high-risk sexual behaviors.

## ■ What is the link between STDs and HIV Infection?

Individuals who are infected with STDs are at least two to five times more likely than uninfected individuals to acquire HIV infection if they are exposed to the virus through sexual contact. In addition, if an HIV-infected individual is also infected with another STD, that person is more likely to transmit HIV through sexual contact than other HIV-infected persons (Wasserheit, 1992).

There is substantial biological evidence demonstrating that the presence of other STDs increases the likelihood of both transmitting and acquiring HIV.

- **Increased susceptibility.** STDs appear to increase susceptibility to HIV infection by two mechanisms. Genital ulcers (e.g., syphilis, herpes, or chancroid) result in breaks in the genital tract lining or skin. These breaks create a portal of entry for HIV. Additionally, inflammation resulting from genital ulcers or non-ulcerative STDs (e.g., chlamydia, gonorrhea, and trichomoniasis) increase the concentration of cells in genital secretions that can serve as targets for HIV (e.g., CD4+ cells).
- **Increased infectiousness.** STDs also appear to increase the risk of an HIV-infected person transmitting the virus to his or her sex partners. Studies have shown that HIV-infected individuals who are also infected with other STDs are particularly likely to shed HIV in their genital secretions. For example, men who are infected with both gonorrhea and HIV are more than twice as likely to have HIV in their genital secretions than are those who are infected only with HIV. Moreover, the median concentration of HIV in semen is as much as 10 times higher in men who are infected with both gonorrhea and HIV than in men infected only with HIV. The higher the concentration of HIV in semen or genital fluids, the more likely it is that HIV will be transmitted to a sex partner.

## ■ How can STD treatment slow the spread of HIV infection?

Evidence from intervention studies indicates that detecting and treating STDs may reduce HIV transmission.

- STD treatment reduces an individual's ability to transmit HIV. Studies have shown that treating STDs in HIV-infected individuals decreases both the amount of HIV in genital secretions and how frequently HIV is found in those secretions (Fleming, Wasserheit, 1999).
- Herpes can make people more susceptible to HIV infection, and it can make HIV-infected individuals more infectious. It is critical that all individuals, especially those with herpes, know whether they are infected with HIV and, if uninfected with HIV, take measures to protect themselves from infection with HIV.
- Among individuals with both herpes and HIV, trials are underway studying if treatment of the genital herpes helps prevent HIV transmission to partners.

## ■ What are the implications for HIV prevention?

Strong STD prevention, testing, and treatment can play a vital role in comprehensive programs to prevent sexual transmission of HIV. Furthermore, STD trends can offer important insights into where the HIV epidemic may grow, making STD surveillance data helpful in forecasting where HIV rates are likely to increase. Better linkages are needed between HIV and STD prevention efforts nationwide in order to control both epidemics.

In the context of persistently high prevalence of STDs in many parts of the United States and with emerging evidence that the U.S. HIV epidemic increasingly is affecting populations with the highest rates of curable STDs, the CDC/HRSA Advisory Committee on HIV/AIDS and STD Prevention (CHAC) recommended the following:

- Early detection and treatment of curable STDs should become a major, explicit component of comprehensive HIV prevention programs at national, state, and local levels;

- In areas where STDs that facilitate HIV transmission are prevalent, screening and treatment programs should be expanded;
- HIV testing should always be recommended for individuals who are diagnosed with or suspected to have an STD.
  - HIV and STD prevention programs in the United States, together with private and public sector partners, should take joint responsibility for implementing these strategies.

CHAC also notes that early detection and treatment of STDs should be only one component of a comprehensive HIV prevention program, which also must include a range of social, behavioral, and biomedical interventions.

# PID (Pelvic Inflammatory Disease)

## What is PID?

Pelvic inflammatory disease (PID) is a general term that refers to infection of the uterus (womb), fallopian tubes (tubes that carry eggs from the ovaries to the uterus) and other reproductive organs. It is a common and serious complication of some sexually transmitted diseases (STDs), especially chlamydia and gonorrhea. PID can damage the fallopian tubes and tissues in and near the uterus and ovaries. PID can lead to serious consequences including infertility, ectopic pregnancy (a pregnancy in the fallopian tube or elsewhere outside of the womb), abscess formation, and chronic pelvic pain.

## ■ How common is PID?

Each year in the United States, it is estimated that more than 1 million women experience an episode of acute PID. More than 100,000 women become infertile each year as a result of PID, and a large proportion of the ectopic pregnancies occurring every year are due to the consequences of PID.

## ■ How do women get PID?

PID occurs when bacteria move upward from a woman's vagina or cervix (opening to the uterus) into her reproductive organs. Many different organisms can cause PID, but many cases are associated with gonorrhea and chlamydia, two very common bacterial STDs. A prior episode of PID increases the risk of another episode because the reproductive organs may be damaged during the initial bout of infection.

Sexually active women in their childbearing years are most at risk, and those under age 25 are more likely to develop PID than those older than 25. This is partly because the cervix of teenage girls and young women is not fully matured, increasing their susceptibility to the STDs that are linked to PID.

The more sex partners a woman has, the greater her risk of developing PID. Also, a woman whose partner has more than one sex partner is at greater risk of developing PID, because of the potential for more exposure to infectious agents.

Women who douche may have a higher risk of developing PID compared with women who do not douche. Research has shown that douching changes the vaginal flora (organisms that live in the vagina) in harmful ways, and can force bacteria into the upper reproductive organs from the vagina.

Women who have an intrauterine device (IUD) inserted may have a slightly increased risk of PID near the time of insertion compared with women using other contraceptives or no contraceptive at all. However, this risk is greatly reduced if a woman is tested and, if necessary, treated for STDs before an IUD is inserted.

## ■ What are the signs and symptoms?

Symptoms of PID vary from none to severe. When PID is caused by chlamydial infection, a woman may experience mild symptoms or no symptoms at all, while serious damage is being done to her reproductive organs. Because of vague symptoms, PID goes unrecognized by women and their health care providers about two thirds of the time. Women who have symptoms of PID most commonly have lower abdominal pain. Other signs and symptoms include fever, unusual vaginal discharge that may have a foul odor, painful intercourse, painful urination, irregular menstrual bleeding, and pain in the right upper abdomen (rare).

## ■ What are the complications of PID?

Prompt and appropriate treatment can help prevent complications of PID. Without treatment, PID can cause permanent damage to the female reproductive organs. Infection-causing bacteria can silently invade the fallopian tubes, causing normal tissue to turn into scar tissue. This scar tissue blocks or interrupts the normal movement of eggs into the uterus. If the fallopian tubes are totally blocked by scar tissue, sperm cannot fertilize an egg, and the woman becomes infertile. Infertility also can occur if the fallopian tubes are partially blocked or even slightly damaged. About one in ten women with PID becomes infertile, and if a woman has multiple episodes of PID, her chances of becoming infertile increase.

In addition, a partially blocked or slightly damaged fallopian tube may cause a fertilized egg to remain in the fallopian

tube. If this fertilized egg begins to grow in the tube as if it were in the uterus, it is called an ectopic pregnancy. As it grows, an ectopic pregnancy can rupture the fallopian tube causing severe pain, internal bleeding, and even death.

Scarring in the fallopian tubes and other pelvic structures can also cause chronic pelvic pain (pain that lasts for months or even years). Women with repeated episodes of PID are more likely to suffer infertility, ectopic pregnancy, or chronic pelvic pain.

### ■ How is PID diagnosed?

PID is difficult to diagnose because the symptoms are often subtle and mild. Many episodes of PID go undetected because the woman or her health care provider fails to recognize the implications of mild or nonspecific symptoms. Because there are no precise tests for PID, a diagnosis is usually based on clinical findings. If symptoms such as lower abdominal pain are present, a health care provider should perform a physical examination to determine the nature and location of the pain and check for fever, abnormal vaginal or cervical discharge, and for evidence of gonorrhea or chlamydial infection. If the findings suggest PID, treatment is necessary.

The health care provider may also order tests to identify the infection-causing organism (e.g., chlamydial or gonorrhea infection) or to distinguish between PID and other problems with similar symptoms. A pelvic ultrasound is a helpful procedure for diagnosing PID. An ultrasound can view the pelvic area to see whether the fallopian tubes are enlarged or whether an abscess is present. In some cases, a laparoscopy may be necessary to confirm the diagnosis. A laparoscopy is a surgical procedure in which a thin, rigid tube with a lighted end and camera (laparoscope) is inserted through a small incision in the abdomen. This procedure enables the doctor to view the internal pelvic organs and to take specimens for laboratory studies, if needed.

### ■ What is the treatment for PID?

PID can be cured with several types of antibiotics. A health care provider will determine and prescribe the best therapy. However, antibiotic treatment does not reverse any damage that has already occurred to the reproductive organs. If a woman has pelvic pain and other symptoms of PID, it is critical that she seek care immediately. Prompt antibiotic treatment can prevent severe damage to reproductive organs. The longer a woman delays treatment for PID, the more likely she is to become infertile or to have a future ectopic pregnancy because of damage to the fallopian tubes.

Because of the difficulty in identifying organisms infecting the internal reproductive organs and because more than one organism may be responsible for an episode of PID, PID is usually treated with at least two antibiotics that are effective against a wide range of infectious agents. These antibiotics can be given by mouth or by injection. The symptoms may go away before the infection is cured. Even if symptoms go away, the woman should finish taking all of the prescribed medicine. This will help prevent the infection from returning. Women being treated for PID should be re-evaluated by their health care provider two to three days after starting treatment to be sure the antibiotics are working to cure the infection. In addition, a woman's sex partner(s) should be treated to decrease the risk of re-infection, even if the partner(s) has no symptoms. Although sex partners may have no symptoms, they may still be infected with the organisms that can cause PID.

Hospitalization to treat PID may be recommended if the woman (1) is severely ill (e.g., nausea, vomiting, and high fever); (2) is pregnant; (3) does not respond to or cannot take oral medication and needs intravenous antibiotics; (4) has an abscess in the fallopian tube or ovary (tubo-ovarian abscess); or (5) needs to be monitored to be sure that her symptoms are not due to another condition that would require emergency surgery (e.g., appendicitis). If symptoms continue or if an abscess does not go away, surgery may be needed. Complications of PID, such as chronic pelvic pain and scarring are difficult to treat, but sometimes they improve with surgery.

### ■ How can PID be prevented?

Women can protect themselves from PID by taking action to prevent STDs or by getting early treatment if they do get an STD. The surest way to avoid transmission of STDs is to abstain from sexual intercourse, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected.

Latex male condoms, when used consistently and correctly, can reduce the risk of transmission of chlamydia and gonorrhea. CDC recommends yearly chlamydia testing of all sexually active women age 25 or younger, older women with risk factors for chlamydial infections (those who have a new sex partner or multiple sex partners), and all pregnant women. An appropriate sexual risk assessment by a health care provider should always be conducted and may indicate more frequent screening for some women.

Any genital symptoms such as an unusual sore, discharge with odor, burning during urination, or bleeding between menstrual cycles could mean an STD infection. If a woman has any of these symptoms, she should stop having sex and consult a health care provider immediately. Treating STDs early can prevent PID. Women who are told they have an STD and are treated for it should notify all of their recent sex partners so they can see a health care provider and be evaluated for STDs. Sexual activity should not resume until all sex partners have been examined and, if necessary, treated.

# Gonorrhea

## What is gonorrhea?

Gonorrhea is a sexually transmitted disease (STD). Gonorrhea is caused by *Neisseria gonorrhoeae*, a bacterium that can grow and multiply easily in the warm, moist areas of the reproductive tract, including the cervix (opening to the womb), uterus (womb), and fallopian tubes (egg canals) in women, and in the urethra (urine canal) in women and men. The bacterium can also grow in the mouth, throat, eyes, and anus.

## ■ How common is gonorrhea?

Gonorrhea is a very common infectious disease. CDC estimates that more than 700,000 persons in the U.S. get new gonorrheal infections each year. Only about half of these infections are reported to CDC. In 2006, 358,366 cases of gonorrhea were reported to CDC. In the period from 1975 to 1997, the national gonorrhea rate declined, following the implementation of the national gonorrhea control program in the mid-1970s. After several years of stable gonorrhea rates, however, the national gonorrhea rate increased for the second consecutive year. In 2006, the rate of reported gonorrheal infections was 120.9 per 100,000 persons.

## ■ How do people get gonorrhea?

Gonorrhea is spread through contact with the penis, vagina, mouth, or anus. Ejaculation does not have to occur for gonorrhea to be transmitted or acquired. Gonorrhea can also be spread from mother to baby during delivery.

People who have had gonorrhea and received treatment may get infected again if they have sexual contact with a person infected with gonorrhea.

## ■ Who is at risk for gonorrhea?

Gonorrhea is known as a “silent” disease because any sexually active person can be infected with gonorrhea. In the United States, the highest reported rates of infection are among sexually active teenagers, young adults, and African Americans.

## ■ What are the signs and symptoms?

Some men with gonorrhea may have no symptoms at all. However, some men have signs or symptoms that appear two to five days after infection; symptoms can take as long as 30 days to appear. Symptoms and signs include a burning sensation when urinating, or a white, yellow, or green discharge from the penis. Sometimes men with gonorrhea get painful or swollen testicles.

In women, the symptoms of gonorrhea are often mild, but most women who are infected have no symptoms. Even when a woman has symptoms, they can be so non-specific as to be mistaken for a bladder or vaginal infection. The initial symptoms and signs in women include a painful or burning sensation when urinating, increased vaginal discharge, or vaginal bleeding between periods. Women with gonorrhea are at risk of developing serious complications from the infection, regardless of the presence or severity of symptoms.

Symptoms of rectal infection in both men and women may include discharge, anal itching, soreness, bleeding, or painful bowel movements. Rectal infection also may cause no symptoms. Infections in the throat may cause a sore throat but usually causes no symptoms.

## ■ What are the complications of gonorrhea?

Untreated gonorrhea can cause serious and permanent health problems in both women and men.

In women, gonorrhea is a common cause of pelvic inflammatory disease (PID). About one million women each year in the United States develop PID. The symptoms may be quite mild or can be very severe and can include abdominal pain and fever. PID can lead to internal abscesses (pus-filled “pockets” that are hard to cure) and long-lasting, chronic pelvic pain. PID can damage the fallopian tubes enough to cause infertility or increase the risk of ectopic pregnancy. Ectopic pregnancy is a life-threatening condition in which a fertilized egg grows outside the uterus, usually in a fallopian tube.

In men, gonorrhea can cause epididymitis, a painful condition of the ducts attached to the testicles that may lead to infertility if left untreated.

Gonorrhea can spread to the blood or joints. This condition can be life threatening. In addition, people with gonorrhea can more easily contract HIV, the virus that causes AIDS. HIV-infected people with gonorrhea can transmit HIV more easily to someone else than if they did not have gonorrhea.

### ■ How does gonorrhea affect a pregnant woman and her baby?

If a pregnant woman has gonorrhea, she may give the infection to her baby as the baby passes through the birth canal during delivery. This can cause blindness, joint infection, or a life-threatening blood infection in the baby. Treatment of gonorrhea as soon as it is detected in pregnant women will reduce the risk of these complications. Pregnant women should consult a health care provider for appropriate examination, testing, and treatment, as necessary.

### ■ How is gonorrhea diagnosed?

Several laboratory tests are available to diagnose gonorrhea. A doctor or nurse can obtain a sample for testing from the parts of the body likely to be infected (cervix, urethra, rectum, or throat) and send the sample to a laboratory for analysis. Gonorrhea that is present in the cervix or urethra can be diagnosed in a laboratory by testing a urine sample. A quick laboratory test for gonorrhea that can be done in some clinics or doctor’s offices is a Gram stain. A Gram stain of a sample from a urethra or a cervix allows the doctor to see the gonorrhea bacterium under a microscope. This test works better for men than for women.

### ■ What is the treatment for gonorrhea?

Several antibiotics can successfully cure gonorrhea in adolescents and adults. However, drug-resistant strains of gonorrhea are increasing in many areas of the world, including the United States, and successful treatment of gonorrhea is becoming more difficult. Because many people with gonorrhea also have chlamydia, another STD, antibiotics for both infections are usually given together. Persons with gonorrhea should be tested for other STDs.

It is important to take all of the medication prescribed to cure gonorrhea. Although medication will stop the infection, it will not repair any permanent damage done by the disease. People who have had gonorrhea and have been treated can get the disease again if they have sexual contact with persons infected with gonorrhea. If a person’s symptoms continue even after receiving treatment, he or she should return to a doctor to be reevaluated.

### ■ How can gonorrhea be prevented?

The surest way to avoid transmission of STDs is to abstain from sexual intercourse, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected.

Latex condoms, when used consistently and correctly, can reduce the risk of transmission of gonorrhea.

Any genital symptoms such as discharge or burning during urination or unusual sore or rash should be a signal to stop having sex and to see a doctor immediately. If a person has been diagnosed and treated for gonorrhea, he or she should notify all recent sex partners so they can see a health care provider and be treated. This will reduce the risk that the sex partners will develop serious complications from gonorrhea and will also reduce the person’s risk of becoming re-infected. The person and all of his or her sex partners must avoid sex until they have completed their treatment for gonorrhea.

CS115145

CONTENT UPDATED: DECEMBER, 2007

# Genital HPV

## What is genital HPV infection?

Genital human papillomavirus (HPV) is the most common sexually transmitted infection (STI). There are more than 40 HPV types that can infect the genital areas of men and women, including the skin of the penis, vulva (area outside the vagina), and anus, and the linings of the vagina, cervix, and rectum. You cannot see HPV. Most people who become infected with HPV do not even know they have it.

## ■ What are the symptoms and potential consequences of HPV?

Most people with HPV do not develop symptoms or health problems. But sometimes, certain types of HPV can cause genital warts in men and women. Other HPV types can cause cervical cancer and other less common cancers, such as cancers of the vulva, vagina, anus, and penis. The types of HPV that can cause genital warts are not the same as the types that can cause cancer.

HPV types are often referred to as “low-risk” (wart-causing) or “high-risk” (cancer-causing), based on whether they put a person at risk for cancer. In 90% of cases, the body’s immune system clears the HPV infection naturally within two years. This is true of both high-risk and low-risk types.

**Genital warts** usually appear as small bumps or groups of bumps, usually in the genital area. They can be raised or flat, single or multiple, small or large, and sometimes cauliflower shaped. They can appear on the vulva, in or around the vagina or anus, on the cervix, and on the penis, scrotum, groin, or thigh. Warts may appear within weeks or months after sexual contact with an infected person. Or, they may not appear at all. If left untreated, genital warts may go away, remain unchanged, or increase in size or number. They will not turn into cancer.

**Cervical cancer** does not have symptoms until it is quite advanced. For this reason, it is important for women to get screened regularly for cervical cancer.

**Other less common HPV-related cancers**, such as cancers of the vulva, vagina, anus and penis, also may not have signs or symptoms until they are advanced.

## ■ How do people get genital HPV?

Genital HPV is passed on through genital contact, most often during vaginal and anal sex. A person can have HPV even if years have passed since he or she had sex. Most infected persons do not realize they are infected or that they are passing the virus to a sex partner. Very rarely, a pregnant woman with genital HPV can pass HPV to her baby during vaginal delivery. In these cases, the child may develop warts in the throat or voice box – a condition called *recurrent respiratory papillomatosis* (RRP).

## ■ How does HPV cause genital warts and cancer?

HPV can cause normal cells on infected skin or mucous membranes to turn abnormal. Most of the time, you cannot see or feel these cell changes. In most cases, the body fights off HPV naturally and the infected cells then go back to normal.

- Sometimes, low-risk types of HPV can cause visible changes that take the form of genital warts.
  - If a high-risk HPV infection is not cleared by the immune system, it can linger for many years and turn abnormal cells into cancer over time. About 10% of women with high-risk HPV on their cervix will develop long-lasting HPV infections that put them at risk for cervical cancer. Similarly, when high-risk HPV lingers and infects the cells of the penis, anus, vulva, or vagina, it can cause cancer in those areas. But these cancers are much less common than cervical cancer.

## ■ How common are HPV and related diseases?

**HPV infection.** Approximately 20 million Americans are currently infected with HPV, and another 6.2 million people become newly infected each year. At least 50% of sexually active men and women acquire genital HPV infection at some point in their lives.

**Genital warts.** About 1% of sexually active adults in the U.S. have genital warts at any one time.

**Cervical cancer.** The American Cancer Society estimates that in 2008, 11,070 women will be diagnosed with cervical cancer.

**Other HPV-related cancers** are much less common than cervical cancer. The American Cancer Society estimates that in 2008, there will be:

- 3,460 women diagnosed with vulvar cancer
- 2,210 women diagnosed with vaginal and other female genital cancers
- 1,250 men diagnosed with penile and other male genital cancers
- 3,050 women and 2,020 men diagnosed with anal cancer.

Certain populations may be at higher risk for HPV-related cancers, such as gay and bisexual men, and individuals with weak immune systems (including those who have HIV/AIDS).

**RRP** is very rare. It is estimated that less than 2,000 children get RRP every year.

## ■ How can people prevent HPV?

A vaccine can now protect females from the four types of HPV that cause most cervical cancers and genital warts. The vaccine is recommended for 11 and 12 year-old girls. It is also recommended for girls and women age 13 through 26 who have not yet been vaccinated or completed the vaccine series.

For those who choose to be sexually active, condoms may lower the risk of HPV, if used all the time and the right way. Condoms may also lower the risk of developing HPV-related diseases, such as genital warts and cervical cancer. But HPV can infect areas that are not covered by a condom—so condoms may not *fully* protect against HPV. So the only sure way to prevent HPV is to avoid all sexual activity. Individuals can also lower their chances of getting HPV by being in a mutually faithful relationship with someone who has had no or few sex partners. However, even people with only one lifetime sex partner can get HPV. For those who are not in long-term mutually monogamous relationships, limiting the number of sex partners and choosing a partner who has had no or few prior sex partners may lower the risk of infection. But it may not be possible to determine if a partner who has been sexually active in the past is currently infected.

## ■ How can people prevent HPV-related diseases?

There are important steps females can take to prevent **cervical cancer**. The HPV vaccine can protect against most cervical cancers (see above). Cervical cancer can also be prevented with routine cervical cancer screening and follow-up of abnormal results. The Pap test can identify abnormal or pre-cancerous changes in the cervix so that they can be removed before cancer develops. An HPV DNA test, which can find high-risk HPV on a woman's cervix, may also be used with a Pap test in certain cases. The HPV test can help healthcare professionals decide if more tests or treatment are needed. Even women who got the vaccine when they were younger need regular cervical cancer screening because the vaccine does not protect against all cervical cancers.

There is currently no vaccine licensed to prevent HPV-related diseases in males. Studies are now being done to find out if the vaccine is also safe in men, and if it can protect them against HPV and related conditions. The FDA will consider licensing the vaccine for boys and men if there is proof that it is safe and effective for them. There is also no approved screening test to find early signs of penile or anal cancer. Some experts recommend yearly anal Pap tests for gay and bisexual men and for HIV-positive persons because anal cancer is more common in these populations. Scientists are still studying how best to screen for penile and anal cancers in those who may be at highest risk for those diseases.

Generally, cesarean delivery is not recommended for women with genital warts to prevent RRP in their babies. This is because it is unclear whether cesarean delivery actually prevents RRP in infants and children.

## ■ Is there a test for HPV?

The HPV test on the market is only used as part of cervical cancer screening. There is no general test for men or women to check one's overall "HPV status." HPV usually goes away on its own, without causing health problems. So an HPV infection that is found today will most likely not be there a year or two from now. For this reason, there is no need to be tested just to find out if you have HPV now. However, you should get tested for signs of disease that HPV can cause, such as cervical cancer.

- **Genital warts** are diagnosed by visual inspection. Some health care providers may use acetic acid, a vinegar solution, to help identify flat warts. But this is not a sensitive test so it may wrongly identify normal skin as a wart.
- **Cervical cell changes** can be identified by routine Pap tests. The HPV test can identify high-risk HPV types on a woman's cervix, which can cause cervical cell changes and cancer.
- As noted above, there is currently no approved test to find HPV or related cancers in men. But HPV is very common and HPV-related cancers are very rare in men.

## ■ Is there a treatment for HPV or related diseases?

There is no treatment for the virus itself, but a healthy immune system can usually fight off HPV naturally. There are treatments for the diseases that HPV can cause:



**Visible genital warts** can be removed by patient-applied medications, or treated by a health care provider. Some individuals choose to forego treatment to see if the warts will disappear on their own. No one treatment is better than another.

**Cervical cancer** is most treatable when it is diagnosed and treated early. But women who get routine Pap testing and follow up as needed can identify problems before cancer develops. Prevention is always better than treatment.

**Other HPV-related cancers** are also more treatable when diagnosed and treated early.

# Genital Herpes

## What is genital herpes?

Genital herpes is a sexually transmitted disease (STD) caused by the herpes simplex viruses type 1 (HSV-1) or type 2 (HSV-2). Most genital herpes is caused by HSV-2. Most individuals have no or only minimal signs or symptoms from HSV-1 or HSV-2 infection. When signs do occur, they typically appear as one or more blisters on or around the genitals or rectum. The blisters break, leaving tender ulcers (sores) that may take two to four weeks to heal the first time they occur. Typically, another outbreak can appear weeks or months after the first, but it almost always is less severe and shorter than the first outbreak. Although the infection can stay in the body indefinitely, the number of outbreaks tends to decrease over a period of years.

## ■ How common is genital herpes?

Results of a nationally representative study show that genital herpes infection is common in the United States. Nationwide, at least 45 million people ages 12 and older, or one out of five adolescents and adults, have had genital HSV infection. Over the past decade, the percent of Americans with genital herpes infection in the U.S. has decreased.

Genital HSV-2 infection is more common in women (approximately one out of four women) than in men (almost one out of eight). This may be due to male-to-female transmission being more likely than female-to-male transmission.

## ■ How do people get genital herpes?

HSV-1 and HSV-2 can be found in and released from the sores that the viruses cause, but they also are released between outbreaks from skin that does not appear to have a sore. Generally, a person can only get HSV-2 infection during sexual contact with someone who has a genital HSV-2 infection. Transmission can occur from an infected partner who does not have a visible sore and may not know that he or she is infected.

HSV-1 can cause genital herpes, but it more commonly causes infections of the mouth and lips, so-called “fever blisters.”

HSV-1 infection of the genitals can be caused by oral-genital or genital-genital contact with a person who has HSV-1 infection. Genital HSV-1 outbreaks recur less regularly than genital HSV-2 outbreaks.

## ■ What are the signs and symptoms of genital herpes?

Most people infected with HSV-2 are not aware of their infection. However, if signs and symptoms occur during the first outbreak, they can be quite pronounced. The first outbreak usually occurs within two weeks after the virus is transmitted, and the sores typically heal within two to four weeks. Other signs and symptoms during the primary episode may include a second crop of sores, and flu-like symptoms, including fever and swollen glands. However, most individuals with HSV-2 infection never have sores, or they have very mild signs that they do not even notice or that they mistake for insect bites or another skin condition.

## ■ What are the complications of genital herpes?

Genital herpes can cause recurrent painful genital sores in many adults, and herpes infection can be severe in people with suppressed immune systems. Regardless of severity of symptoms, genital herpes frequently causes psychological distress in people who know they are infected.

In addition, genital HSV can lead to potentially fatal infections in babies. It is important that women avoid contracting herpes during pregnancy because a newly acquired infection during late pregnancy poses a greater risk of transmission to the baby. If a woman has active genital herpes at delivery, a cesarean delivery is usually performed. Fortunately, infection of a baby from a woman with herpes infection is rare.

Herpes may play a role in the spread of HIV, the virus that causes AIDS. Herpes can make people more susceptible to HIV infection, and it can make HIV-infected individuals more infectious.

## ■ How is genital herpes diagnosed?

The signs and symptoms associated with HSV-2 can vary greatly. Health care providers can diagnose genital herpes by visual inspection if the outbreak is typical, and by taking a sample from the sore(s) and testing it in a laboratory. HSV infections can be diagnosed between outbreaks by the use of a blood test. Blood tests, which detect antibodies to HSV-1 or HSV-2 infection, can be helpful, although the results are not always clear-cut.

## ■ Is there a treatment for herpes?

There is no treatment that can cure herpes, but antiviral medications can shorten and prevent outbreaks during the period of time the person takes the medication. In addition, daily suppressive therapy for symptomatic herpes can reduce transmission to partners.

## ■ How can herpes be prevented?

The surest way to avoid transmission of sexually transmitted diseases, including genital herpes, is to abstain from sexual contact, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected.

Genital ulcer diseases can occur in both male and female genital areas that are covered or protected by a latex condom, as well as in areas that are not covered. Correct and consistent use of latex condoms can reduce the risk of genital herpes.

Persons with herpes should abstain from sexual activity with uninfected partners when lesions or other symptoms of herpes are present. It is important to know that even if a person does not have any symptoms he or she can still infect sex partners. Sex partners of infected persons should be advised that they may become infected and they should use condoms to reduce the risk. Sex partners can seek testing to determine if they are infected with HSV. A positive HSV-2 blood test most likely indicates a genital herpes infection.

# Chlamydia

## What is chlamydia?

Chlamydia is a common sexually transmitted disease (STD) caused by the bacterium, *Chlamydia trachomatis*, which can damage a woman's reproductive organs. Even though symptoms of chlamydia are usually mild or absent, serious complications that cause irreversible damage, including infertility, can occur "silently" before a woman ever recognizes a problem. Chlamydia also can cause discharge from the penis of an infected man.

## ■ How common is chlamydia?

Chlamydia is the most frequently reported bacterial sexually transmitted disease in the United States. In 2006, 1,030,911 chlamydial infections were reported to CDC from 50 states and the District of Columbia. Under-reporting is substantial because most people with chlamydia are not aware of their infections and do not seek testing. Also, testing is often not done if patients are treated for their symptoms. An estimated 2,291,000 non-institutionalized U.S. civilians ages 14-39 are infected with chlamydia based on the U.S. National Health and Nutrition Examination Survey. Women are frequently re-infected if their sex partners are not treated.

## ■ How do people get chlamydia?

Chlamydia can be transmitted during vaginal, anal, or oral sex. Chlamydia can also be passed from an infected mother to her baby during vaginal childbirth.

Any sexually active person can be infected with chlamydia. The greater the number of sex partners, the greater the risk of infection. Because the cervix (opening to the uterus) of teenage girls and young women is not fully matured and is probably more susceptible to infection, they are at particularly high risk for infection if sexually active. Since chlamydia can be transmitted by oral or anal sex, men who have sex with men are also at risk for chlamydial infection.

## ■ What are the symptoms of chlamydia?

Chlamydia is known as a "silent" disease because about three quarters of infected women and about half of infected men have no symptoms. If symptoms do occur, they usually appear within 1 to 3 weeks after exposure.

In women, the bacteria initially infect the cervix and the urethra (urine canal). Women who have symptoms might have an abnormal vaginal discharge or a burning sensation when urinating. When the infection spreads from the cervix to the fallopian tubes (tubes that carry fertilized eggs from the ovaries to the uterus), some women still have no signs or symptoms; others have lower abdominal pain, low back pain, nausea, fever, pain during intercourse, or bleeding between menstrual periods. Chlamydial infection of the cervix can spread to the rectum. Men with signs or symptoms might have a discharge from their penis or a burning sensation when urinating. Men might also have burning and itching around the opening of the penis. Pain and swelling in the testicles are uncommon.

Men or women who have receptive anal intercourse may acquire chlamydial infection in the rectum, which can cause rectal pain, discharge, or bleeding. Chlamydia can also be found in the throats of women and men having oral sex with an infected partner.

## ■ What complications can result from untreated chlamydia?

If untreated, chlamydial infections can progress to serious reproductive and other health problems with both short-term and long-term consequences. Like the disease itself, the damage that chlamydia causes is often "silent."

In women, untreated infection can spread into the uterus or fallopian tubes and cause pelvic inflammatory disease (PID). This happens in up to 40 percent of women with untreated chlamydia. PID can cause permanent damage to the fallopian tubes, uterus, and surrounding tissues. The damage can lead to chronic pelvic pain, infertility, and potentially fatal ectopic pregnancy (pregnancy outside the uterus). Women infected with chlamydia are up to five times more likely to become infected with HIV, if exposed.

To help prevent the serious consequences of chlamydia, screening at least annually for chlamydia is recommended for all sexually active women age 25 years and younger. An annual screening test also is recommended for older women with risk factors for chlamydia (a new sex partner or multiple sex partners). All pregnant women should have a screening test for chlamydia. Complications among men are rare. Infection sometimes spreads to the epididymis (the tube that carries sperm from the testis), causing pain, fever, and, rarely, sterility.

Rarely, genital chlamydial infection can cause arthritis that can be accompanied by skin lesions and inflammation of the eye and urethra (Reiter's syndrome).

### ■ How does chlamydia affect a pregnant woman and her baby?

In pregnant women, there is some evidence that untreated chlamydial infections can lead to premature delivery. Babies who are born to infected mothers can get chlamydial infections in their eyes and respiratory tracts. Chlamydia is a leading cause of early infant pneumonia and conjunctivitis (pink eye) in newborns.

### ■ How is chlamydia diagnosed?

There are laboratory tests to diagnose chlamydia. Some can be performed on urine, other tests require that a specimen be collected from a site such as the penis or cervix.

### ■ What is the treatment for chlamydia?

Chlamydia can be easily treated and cured with antibiotics. A single dose of azithromycin or a week of doxycycline (twice daily) are the most commonly used treatments. HIV-positive persons with chlamydia should receive the same treatment as those who are HIV negative.

All sex partners should be evaluated, tested, and treated. Persons with chlamydia should abstain from sexual intercourse until they and their sex partners have completed treatment, otherwise re-infection is possible.

Women whose sex partners have not been appropriately treated are at high risk for re-infection. Having multiple infections increases a woman's risk of serious reproductive health complications, including infertility. Retesting should be encouraged for women three to four months after treatment. This is especially true if a woman does not know if her sex partner received treatment.

### ■ How can chlamydia be prevented?

The surest way to avoid transmission of STDs is to abstain from sexual contact, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected.

Latex male condoms, when used consistently and correctly, can reduce the risk of transmission of chlamydia.

CDC recommends yearly chlamydia testing of all sexually active women age 25 or younger, older women with risk factors for chlamydial infections (those who have a new sex partner or multiple sex partners), and all pregnant women. An appropriate sexual risk assessment by a health care provider should always be conducted and may indicate more frequent screening for some women.

Any genital symptoms such as an unusual sore, discharge with odor, burning during urination, or bleeding between menstrual cycles could mean an STD infection. If a woman has any of these symptoms, she should stop having sex and consult a health care provider immediately. Treating STDs early can prevent PID. Women who are told they have an STD and are treated for it should notify all of their recent sex partners (sex partners within the preceding 60 days) so they can see a health care provider and be evaluated for STDs. Sexual activity should not resume until all sex partners have been examined and, if necessary, treated.

# Bacterial Vaginosis

## What is bacterial vaginosis?

Bacterial Vaginosis (BV) is the name of a condition in women where the normal balance of bacteria in the vagina is disrupted and replaced by an overgrowth of certain bacteria. It is sometimes accompanied by discharge, odor, pain, itching, or burning.

### ■ How common is bacterial vaginosis?

Bacterial Vaginosis (BV) is the most common vaginal infection in women of childbearing age. In the United States, BV is common in pregnant women.

### ■ How do people get bacterial vaginosis?

The cause of BV is not fully understood. BV is associated with an imbalance in the bacteria that are normally found in a woman's vagina. The vagina normally contains mostly "good" bacteria, and fewer "harmful" bacteria. BV develops when there is an increase in harmful bacteria.

Not much is known about how women get BV. There are many unanswered questions about the role that harmful bacteria play in causing BV. Any woman can get BV. However, some activities or behaviors can upset the normal balance of bacteria in the vagina and put women at increased risk including:

- Having a new sex partner or multiple sex partners,
- Douching

It is not clear what role sexual activity plays in the development of BV. Women do not get BV from toilet seats, bedding, swimming pools, or from touching objects around them. Women who have never had sexual intercourse may also be affected.

### ■ What are the signs and symptoms of bacterial vaginosis?

Women with BV may have an abnormal vaginal discharge with an unpleasant odor. Some women report a strong fish-like odor, especially after intercourse. Discharge, if present, is usually white or gray; it can be thin. Women with BV may also have burning during urination or itching around the outside of the vagina, or both. However, most women with BV report no signs or symptoms at all.

### ■ What are the complications of bacterial vaginosis?

In most cases, BV causes no complications. But there are some serious risks from BV including:

- Having BV can increase a woman's susceptibility to HIV infection if she is exposed to the HIV virus.
- Having BV increases the chances that an HIV-infected woman can pass HIV to her sex partner.
- Having BV has been associated with an increase in the development of an infection following surgical procedures such as a hysterectomy or an abortion.
- Having BV while pregnant may put a woman at increased risk for some complications of pregnancy, such as a preterm delivery.
- BV can increase a woman's susceptibility to other STDs, such as herpes simplex virus (HSV), chlamydia and gonorrhea.

## ■ How does bacterial vaginosis affect a pregnant woman and her baby?

Pregnant women with BV more often have babies who are born premature or with low birth weight (low birth weight is less than 5.5 pounds).

The bacteria that cause BV can sometimes infect the uterus (womb) and fallopian tubes (tubes that carry eggs from the ovaries to the uterus). This type of infection is called pelvic inflammatory disease (PID). PID can cause infertility or damage the fallopian tubes enough to increase the future risk of ectopic pregnancy and infertility. Ectopic pregnancy is a life-threatening condition in which a fertilized egg grows outside the uterus, usually in a fallopian tube which can rupture.

## ■ How is bacterial vaginosis diagnosed?

A health care provider must examine the vagina for signs of BV and perform laboratory tests on a sample of vaginal fluid to look for bacteria associated with BV.

## ■ What is the treatment for bacterial vaginosis?

Although BV will sometimes clear up without treatment, all women with symptoms of BV should be treated to avoid complications. Male partners generally do not need to be treated. However, BV may spread between female sex partners. Treatment is especially important for pregnant women. All pregnant women who have ever had a premature delivery or low birth weight baby should be considered for a BV examination, regardless of symptoms, and should be treated if they have BV.

All pregnant women who have symptoms of BV should be checked and treated.

Some physicians recommend that all women undergoing a hysterectomy or abortion be treated for BV prior to the procedure, regardless of symptoms, to reduce their risk of developing an infection.

BV is treatable with antibiotics prescribed by a health care provider. Two different antibiotics are recommended as treatment for BV: metronidazole or clindamycin. Either can be used with non-pregnant or pregnant women, but the recommended dosages differ. Women with BV who are HIV-positive should receive the same treatment as those who are HIV-negative.

BV can recur after treatment.

## ■ How can bacterial vaginosis be prevented?

BV is not completely understood by scientists, and the best ways to prevent it are unknown. However, it is known that BV is associated with having a new sex partner or having multiple sex partners.

The following basic prevention steps can help reduce the risk of upsetting the natural balance of bacteria in the vagina and developing BV:

- Be abstinent.
- Limit the number of sex partners.
- Do not douche.
- Use all of the medicine prescribed for treatment of BV, even if the signs and symptoms go away.

