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# SEXUALLY TRANSMITTED INFECTIONS

How to recognize  
and prevent them



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and prevent them

*We want to thank Aura Andreassen for her useful suggestions and comments.*

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# Index

- 05 Preface
- 07 Introduction
- 09 **PART ONE Sexually transmitted infections**
- 10 What are STIs?
- 12 How are they transmitted?
- 14 What disorders/symptoms can they cause?
- 16 How can you tell if you have an STI?
- 17 Can you be cured when you have an STI?
- 18 What happens if you don't care?
- 18 Are there people who can get contract STIs more easily?
- 20 What are the risk factors?
- 20 How can you prevent STIs? (The safe sex rules)
- 21 Condoms are important
- 25 The main STIs
  -  Chlamydia (*Chlamydia trachomatis*)
  -  Gonorrhoea (*Neisseria gonorrhoeae*)
  -  Syphilis (*Treponema pallidum*)
  -  Trichomoniasis (*Trichomonas vaginalis*)
  -  Genital warts (Human papillomavirus, HPV)
  -  Genital herpes (Herpes simplex virus)
  -  HIV (Human immunodeficiency virus)
- 43 Conclusions
- 49 Useful links
- 51 **PART TWO Love disease**
- 65 Glossary



## *Preface*

For some years now, the Institute Pasteur Italy has successfully launched an original project of scientific dissemination in secondary schools of first and second grade: a series of meetings during which labs are open to students to provide hands-on experience promoting active learning on scientific issues.

It is true that the scientific method is based on observation and understanding of the observed phenomena, however the conversation represents by far the most enjoyable experience. And it was precisely through scientific conversations with the kids, accompanied by experiments, that made us understand that we could add fun to the learning experience!

This is the origin of the series, “I ragazzi di Pasteur” (The kids of Pasteur), created thanks to the successful collaboration between the Institute Pasteur Italy and the IBSA Foundation for scientific research, united in the same mission: to promote research and scientific knowledge.

In each volume of the series, next to the scientific theme presented by an expert and written specifically for a young audience, we will find a comic on the same theme. The great novelty is that the cartoon scene is elaborated by young people who participated in the laboratory experience and was entrusted to the expert hands of the designers of the “Scuola Romana dei Fumetti” (Roman School of Comics).

We believe that these books will be a good read for the kids but, above all, an example of good science!

**Luigi Frati**

President

Istituto Pasteur Italia

**Silvia Misiti**

Director of the IBSA Foundation

for scientific research



## *Introduction*

Sexually transmitted infections (which from now on we will call STIs) are a vast group of infectious diseases transmitted mainly through sexual contact and widespread all over the world.

Often, people with an STI do not experience any problems or discomfort. Not knowing they have an infection, they may pass it on to others unintentionally through sexual intercourse not protected by a condom.

STIs, if not treated in time, can cause serious complications, such as infertility (not being able to get pregnant), tumors, serious damage to the unborn child (if the mother has an infection during pregnancy), and may increase the risk of getting or transmitting the Human Immunodeficiency Virus (HIV), i.e. the virus that causes AIDS (Acquired Immunodeficiency Disease Syndrome).

Young people have an increased risk of acquiring an STI for various reasons: their genital tissues are more vulnerable to these infections; very often they have no symptoms or neglect them; they have more often unprotected sexual intercourse; they may have a large number of sexual partners or be exposed to risky (unprotected) sexual intercourse (sometimes favoured by the use of alcohol or drugs).

Young people sometimes do not know about STIs and how dangerous they can be; frequently they may not have the perception of the real threat posed by STIs. Even if they suspect or fear an infection, they do not know who to contact or who to talk to without feeling judged. They often seek information from friends, on the internet, social media or chats, which are generally inaccurate and possibly misleading. For



young people, the main concern is to avoid unwanted pregnancies rather than prevent diseases.

The aim of this booklet is to explain to young people, using simple and direct language, how they can find out if they have an STI, and help them to understand the risks associated with unprotected sexual intercourse. They will realize how easily one's current and future health can be preserved following the few but effective "rules of safe sex". Finally, some practical indications are given on who they should turn to for an accurate diagnosis or for scientifically sound information.

**Barbara Suligo**

**Maria Cristina Salfa**

# PART ONE

## Sexually transmitted infections




## What are STIs?


**Sexually transmitted infections (STIs)** make up an extensive group of infectious diseases that are widespread all over the world affecting millions of people every year. STIs can have very serious consequences on your health, and on the health of people you come in contact with.

Once called **venereal diseases** or **sexually transmitted diseases**, today they are called sexually transmitted *infections* to highlight the fact that the infected person does not always show signs of real illness but may present with no or mild symptoms (remains asymptomatic).

STIs are a significant health problem throughout the world for several reasons:

- a substantial number of people acquire an STI every year;
- the probability of transmission of an STI to the partner is high;
- there are some groups of people who are more likely to become infected due to their risky behaviour;
- a significant proportion of infected people may remain asymptomatic but are still able to pass on the infection;
- there is a risk of developing serious complications in case of delayed or incorrect diagnosis and treatment.

STIs are caused by pathogenic microorganisms (organisms that cause disease) such as viruses, bacteria, protozoa and parasites ( *table 1*).

According to 2016 WHO estimates, annually there are 376 million new cases of four sexually transmitted bacterial and protozoan infections (that are treatable), among people aged 15-49 years ( *Figure 1*): 156 million *Trichomonas vaginalis* cases, 127 million *Chlamydia trachomatis* cases, 87 million *Neisseria gonorrhoeae* cases, and 6 million syphilis cases. The prevalence of viral STIs is even higher, with an estimated 417 million people infected with herpes simplex type 2, and approximately 291 million women harbouring the human papillomavirus.

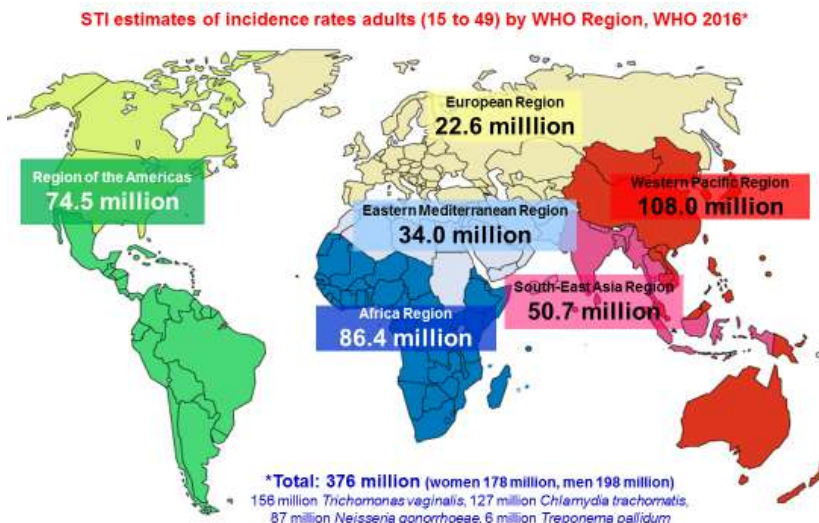


**Table 1.** The main STIs and their pathogens

MICROORGANISM	DISEASE
<b>Bacteria</b>	Chlamydia Gonorrhoea Syphilis
<b>Viruses</b>	Genital herpes HIV (Human immunodeficiency virus) HPV (Human papillomavirus) Viral hepatitis
<b>Protozoa</b>	Trichomoniasis
<b>Parasites</b>	Pubic lice



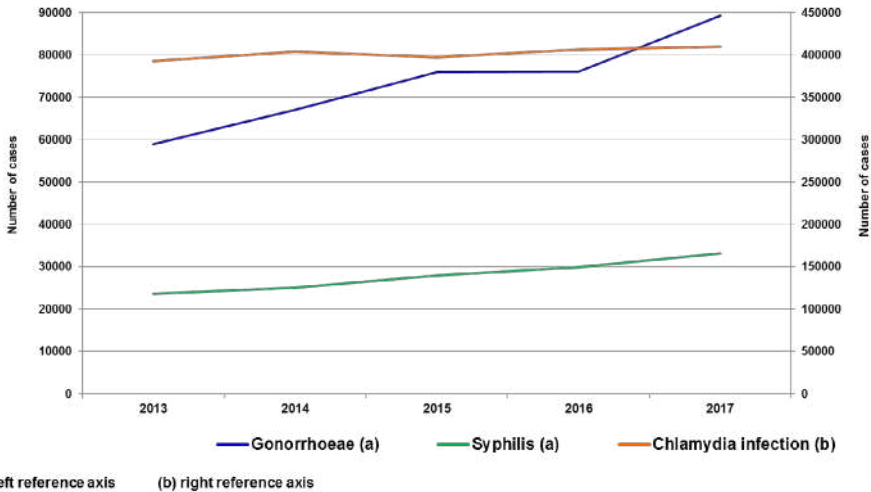
**Figure 1.** WHO estimates: 376 million new cases of four sexually transmitted infections in 2016




Source: Rowley J, Vander Hoorn S, Korenromp E, Low N, Unemo M, Abu-Raddad LJ, Chico RM, Smolak A, Newman L, Gottlieb S, Thwin SS, Broutet N, Taylor MM. *Chlamydia, gonorrhoea, trichomoniasis and syphilis: global prevalence and incidence estimates, 2016*. Bull World Health Organ. 2019 Aug 1;97(8):548-562P. doi: 10.2471/BLT.18.228486. Epub 2019 Jun 6.



**Figure 2.** ECDC data: number of confirmed syphilis, gonorrhoeae, and chlamydia cases by year (EU/EEA countries reporting consistently), 2013-2017



Source: European Centre for Disease Prevention and Control. *Chlamydia infection; Gonorrhoea; Syphilis*. In: ECDC. *Annual epidemiological report for 2017*. Stockholm: ECDC; 2019.

In the European countries, according to data from the European Centre for Infectious Disease Prevention and Control (ECDC), the number of STI cases has increased in recent years (  **Figure 2**).


**Figure 1** shows the increasing trends of three important STIs. Gonorrhoea cases increased by 50% between 2013 and 2017. The trend in syphilis cases has been on the rise since 2013, particularly among men, mainly due to an increase in the number of cases among men who have sex with men (MSM). Chlamydia appears overall as having a slight increase, but a relevant growth was observed in some European countries.




## How are they transmitted?

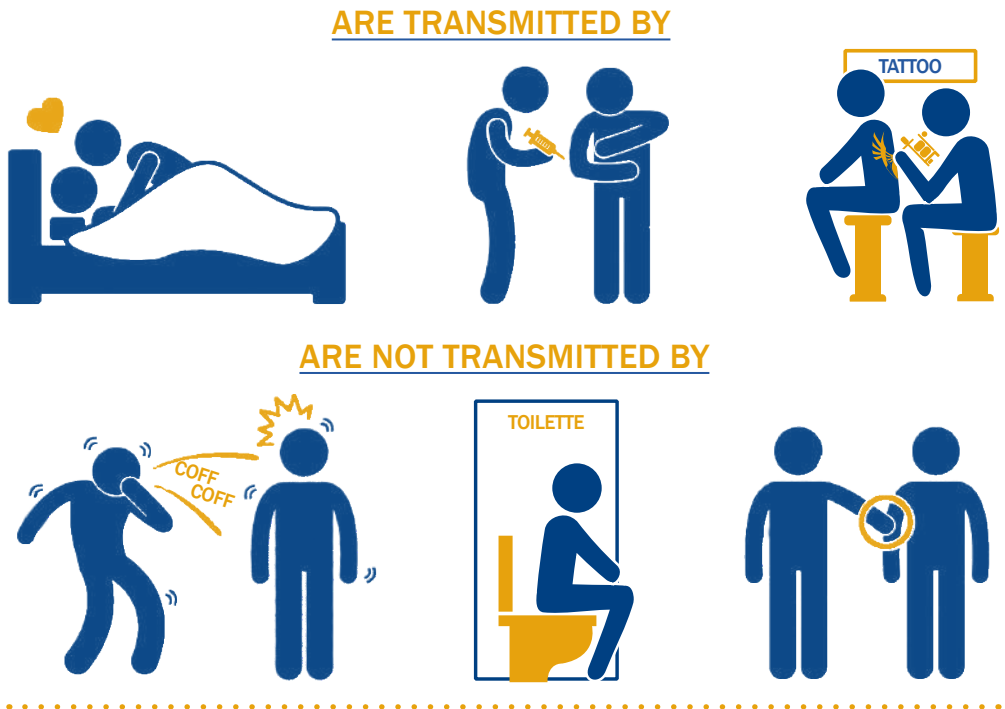
The **transmission of an infection** (or **contagion**) describes the passage of a microorganism between two people in either direction, in other words, when you either become infected or infect another person.

STIs are transmitted through any type of sexual contact (vaginal, anal, oral), through sperm, pre-ejaculatory secretions, vaginal secretions, exchange of saliva. Transmission occurs by direct contact of the skin in the genital area, and contact of the mucous membranes of genitals, anal and mouth. Moreover, STIs can be transmitted through blood (for example, contact with open and bleeding wounds, re-use of syringes, tattoos, piercings) and by passage from the infected mother to the baby during pregnancy, childbirth or breastfeeding.

Infection **does not occur through coughing or sneezing**, on public transport, in the office or with social contacts in general (touching or shaking hands). Furthermore, STIs are not transmitted by mosquitoes or other animals or by the use of toilets (  *Figure 3*).

It is important to remember that, even if you have already had an STI, you can become infected again.

 *Figure 3.* Transmission routes of STIs



Unprotected sex (vaginal, anal or oral intercourse without a condom) with an infected person carries a high risk of STI transmission. Not only vaginal intercourse is at risk for infection. Anal intercourse is particularly risky as it can cause injuries in the rectum: microorganisms can easily enter into the body through these sores, even if they are very small injuries or ulcers. Oral sexual contacts are also a route of infection because vaginal secretions, sperm, pre-spermatid secretion and saliva can contain microorganisms. Even for this type of sexual contact, condom use remains the best means for STI prevention. Furthermore, the presence of small ulcers in the mouth or bleeding gums can increase the risk of STI transmission.

To protect yourself and your partner, sex with any new or occasional partner should be protected by using condoms. At the start of any new sexual relationship, it is advisable to talk about your sexual experiences with your partner: tell your partner if you have or have had in the past an STI and invite him/her to do the same. However, any of you may ignore that you have had an STI because you didn't notice any symptom. For this reason, it is recommended to attend together a sexual health clinic and take the laboratory tests for STIs, to check if any of you has any infection and if so, get treatment. Above all, decide together to use condoms. In some countries, sexual health clinics provide condoms free of charge.



## *What disorders/symptoms can STIs cause?*

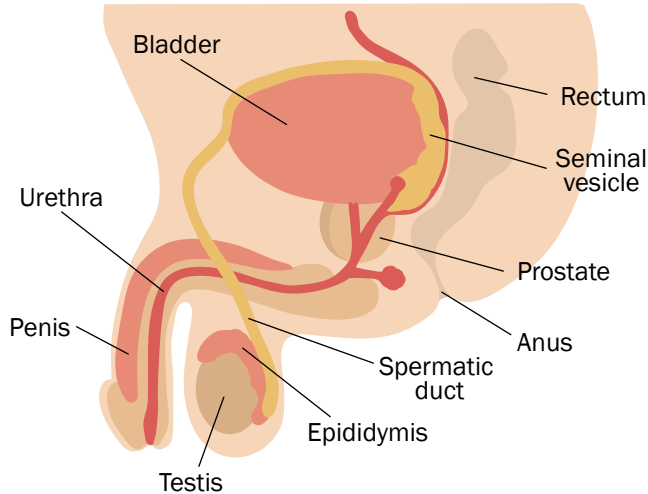
The **incubation period** starts when the microorganism enters into your body. It's important to understand that from this moment you can transmit the infection even if you don't have any symptom. The duration of the incubation period can vary (from days to months) depending on the infection. At the end of this period either symptoms or visible signs may develop, but in many cases there may be no visible symptoms or signs of the disease.



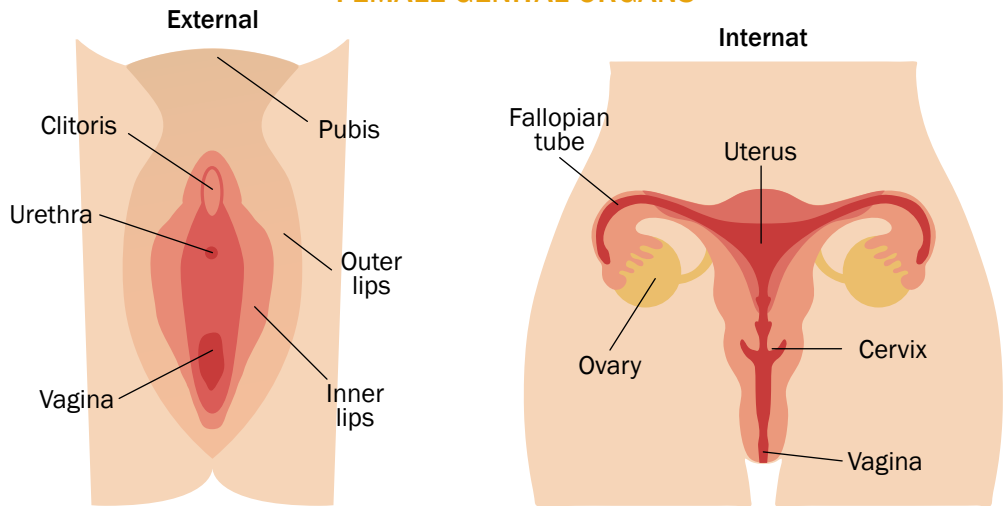
**Figure 4.** Male and female genital organs




### MALE GENITAL ORGANS



### FEMALE GENITAL ORGANS



When symptoms or signs of disease are manifested, they occur mainly in the genital area ( **Figure 4**). Depending on the type of infection and the type of sexual intercourse practiced, they can also appear in the mouth, anus, skin or other organs.



The various STIs present with common symptoms and signs of disease. The most frequent are:

- genital discharge (greenish/yellowish fluid of variable consistency often with bad odour) from the vagina, penis or anus; it is often observed on the underwear;
- pain in the lower part of the abdomen;
- itchiness and/or ulcers of any kind in the region surrounding the genital area, anus or mouth;
- frequent need to urinate, sometimes with a painful or burning sensation;
- pain or bleeding during and/or after sexual intercourse.



## *How can you tell if you have an STI?*

If you suspect you've been infected with an STI or you have had unprotected sex, and you or your partner have not previously been tested for STIs, it is important to attend a sexual health clinic or see a doctor to have some laboratory tests done. Depending on the STI, tests can be performed on a number of different samples: self-collected specimens from vagina, urethra, throat or rectum, on blood, urine or saliva samples, on cervical or vaginal swabs (for women), on urethral swabs or sperm (for men). Sometimes a specialist physician can recognize the disease by simply observing the injuries present in the genital area or in other areas of the body, like the skin.

Therefore, if you have unprotected sex, if you have a condom split, if you took the condom off before ending sex, if you have several sexual partners, if you started a new romantic relationship, if you are not sure of your partner's sexual history, if your partner has been diagnosed with an STI, if you have never been tested for STIs or if you have even the slightest suspicion that you may have contracted an STI, it is important to overcome any embarrassment and immediately contact

your general practitioner or your closest sexual health clinic provider. Early diagnosis is essential, both for prompt treatment to alleviate symptoms and prevent possible complications, and for avoiding passing the infection to other people.

It is important to remember that anyone can have an STI and be infectious, even without knowing it and without showing any symptoms or signs of the disease.

**DO YOU WANT TO KNOW WHERE YOU CAN  
GET A TEST FOR HIV OR OTHER SEXUALLY TRANSMITTED  
INFECTIONS IN EUROPE?**

**GO TO THIS LINK:**

**<http://www.aidsmap.com/european-test-finder>**



The screenshot shows the 'European test finder' page on the AIDSmap website. At the top left is the 'nam aidsmap' logo with the tagline 'HIV & AIDS - sharing knowledge, changing lives'. Navigation links for 'News', 'About HIV', and 'About us' are at the top right. The main heading is 'European test finder'. Below it, the text reads: 'Find out where you can have a test for HIV, hepatitis or other sexually transmitted infections across Europe'. A sub-heading says: 'Use our European test finder to find a testing centre convenient to you.' The instructions are: 'First choose your language. Then select your country using the dropdown menu, and then enter your town/state.' There are three input fields: a language dropdown menu (set to 'English'), a country dropdown menu (labeled 'Please select your country'), and a text box for 'and enter a town / state'. To the right of these fields is a 'Type of test' section with three radio button options: 'HIV', 'Hepatitis C', and 'STI (including hepatitis B)'. A pink 'Search' button is located below the input fields. At the bottom, there is a link: 'If you would like to add your own service to the European Test Finder, please complete our online form.' The page is supported by 'ecdc' (European Centre for Disease Prevention and Control).



*Can you be cured when you have an STI?*

STIs are in most cases treatable by antibiotics or other specific drugs prescribed by a physician. The essential thing is that the therapy is correct and the treatment is started as soon as possible.

During the therapy, you should stop having sex. It is recommended to follow up on recovery with a check-up by your GP or by repeating the laboratory tests at the end of the therapy. In case of failure to clear the infection, your doctor will tell you what to do.

There is no cure that will clear HIV permanently from the body once the infection has been acquired, however if the diagnosis is made quickly after infection, therapy can be set up promptly to keep the infection under control.



## *What happens if you don't care?*

If neglected and left untreated, STIs can cause serious complications even after a long time (months or years) from infection, such as:

- infertility, both in women and men;
- problems during pregnancy and childbirth (e.g. abortion, premature delivery and even death of the baby);
- infection of the newborn (e.g. eye infection, lung infection);
- development of tumors (e.g. uterine or liver cancer);
- neurological symptoms (dementia and ultimately death) in the case of syphilis.

Therefore, if you had a risk behavior (e.g. unprotected sex) or notice any sign of disease, it is important to not deal with the infection yourself but to always contact your GP or a sexual health clinic for help.



## *Are there people who can get STIs more easily?*

STIs can affect anyone who has unprotected sex, regardless of age and gender. However, there are situations that increase the risk of getting an STI.

In particular:

- having **many partners**;
- having **sexual intercourse before the age of 15**, because the genital mucosa is still immature and more sensitive to infections;
- having a **partner who has an STI**;
- abusing with **substances**, such as alcohol or drugs, that compromise mental lucidity and increase **risk behaviours**.

**Women** have a greater risk of contracting an STI than men because the vaginal surface is extensive and consequently the area of entry of microorganisms is wider. Sometimes obvious symptoms are not present and infections go unnoticed. When the disease is finally diagnosed, it may be too late, resulting in inevitable serious consequences. Sometimes women may be embarrassed to propose the use of condoms to their partner and they might not be aware that they can use female condoms (see below).

**Adolescents** are at greater risk of contracting an STI because they have genital tissues that are still immature and more susceptible to infections. They often have no symptoms and therefore do not know that they are infected. The condom is infrequently used by adolescents for a number of reasons: it may be considered a sign of distrust towards the partner, or there can be cultural and psychological barriers that lead to thinking that condoms diminish pleasure, or simply because the cost is high. Sometimes condoms are used improperly, for example wearing it only at the time of ejaculation to avoid pregnancy instead of using it from the beginning to the end of the sexual intercourse. In addition, risk behaviours may be more frequent in adolescents than in the general population. Generally speaking, adolescents have little knowledge of how dangerous STIs are and how to prevent them. Finally, not knowing who to turn to for help, they seek advice from friends or research online rather than seeking medical counseling, ending up on sites that are not scientifically reliable.

People with a **weakened immune system** (for example, HIV-positive individuals) are another group that is more susceptible to STIs because their immune system is not able to protect their bodies from invading microorganisms.



## *What are the risk factors?*

As said, the main risk factor is unprotected sex (without a condom) with one or more partners. The other risk behaviors are: having or having had several sexual partners, having a partner who has (or has had) several sexual partners, having sex at a very young age and not being mentally lucid while having sex because of the use of alcohol and/or drugs (substances that affect the mind).



## *How can you prevent STIs?*

You can avoid getting an STI by following simple but effective rules, called **The safe sex rules**.

### **THE SAFE SEX RULES**

- Always use condoms when having occasional sex, with each new partner and with each partner whose health status you are not aware of. Remember that taking the contraceptive pill prevents pregnancy but does not protect against STIs!
- Always be mentally lucid when you are about to have sex. Do not abuse alcohol and do not use drugs that disturb your mental clarity or compromise your ability to recognize unsafe behaviors. It is important to understand that your ability to think clearly is significantly reduced when alcohol and drugs add up.
- Reduce the number of sexual partners because the higher the number of people you have unprotected sex with, the more you

are putting yourself at risk of contracting an STI; this also applies to your partner.

- Avoid occasional sexual relationships and intercourse without the use of male or female condom or dental dam (preservative used for oral sex) with partners whose health status you don't know.
- Don't have sex (neither vaginal, nor anal or oral) if you or your partner have/has a red inflamed spot, an ulcer or a sore in the genital, anal or oral area, or genital discharge from the vagina, penis or anus.
- Avoid sexual contact while being treated for an STI until you are given the all clear.
- If you suspect that you have an STI, tell your partner, have sex only using a condom and visit your GP or a sexual health clinic as soon as possible.
- Get tested regularly for STIs and HIV if you have numerous occasional partners.

#### **DO NOT FORGET...**

...that those who have an STI have a much higher risk of getting or transmitting HIV (the virus that causes AIDS) compared to those who do not have a sexual infection. This happens because STIs cause alterations in the genital area that favor the entry and exit of the HIV virus. Therefore, seeking immediate care for an STI will reduce the risk of contracting HIV!

If an STI is diagnosed, a laboratory test for detecting HIV should always be performed.



## *Condoms are important*

The condom is a preservative and the safest barrier method to protect oneself against STIs. It must however always be used correctly during all types of sexual intercourse (vaginal, anal and oral).

The use of condoms is not a gesture of distrust towards your partner, it rather represents a form of respect for your health and that of your partner. Trusting your partner means being aware of the possibility that some previous partner of any of you may have had an STI, perhaps without knowing it, and may have passed it on without anyone ever realizing it.

For genital herpes, papillomavirus infections and syphilis, the protection offered by condoms may be limited because these infections can also be transmitted through contact with cutaneous or mucosal parts of the ano-genital area that are not protected by the condom. However, the risk of transmission of these infections can be drastically reduced by the correct and consistent use of condoms during all types of sexual contact, especially when combined with the other “safe sex rules”.

It is important to remember that the condom must never be re-used, it must be of the right size and must be kept away from heat sources. Do not keep it in the dashboard of the car or in your jeans pockets!

If you are allergic to latex, there are special condoms that contain no or very little of the allergenic components.

In addition, oil-based lubricants, vaseline, body lotions, edible oils or massage oils should never be used together with condoms because they may cause condom breakage; instead, special water-based lubricants can be used.


### **PAY ATTENTION TO:**

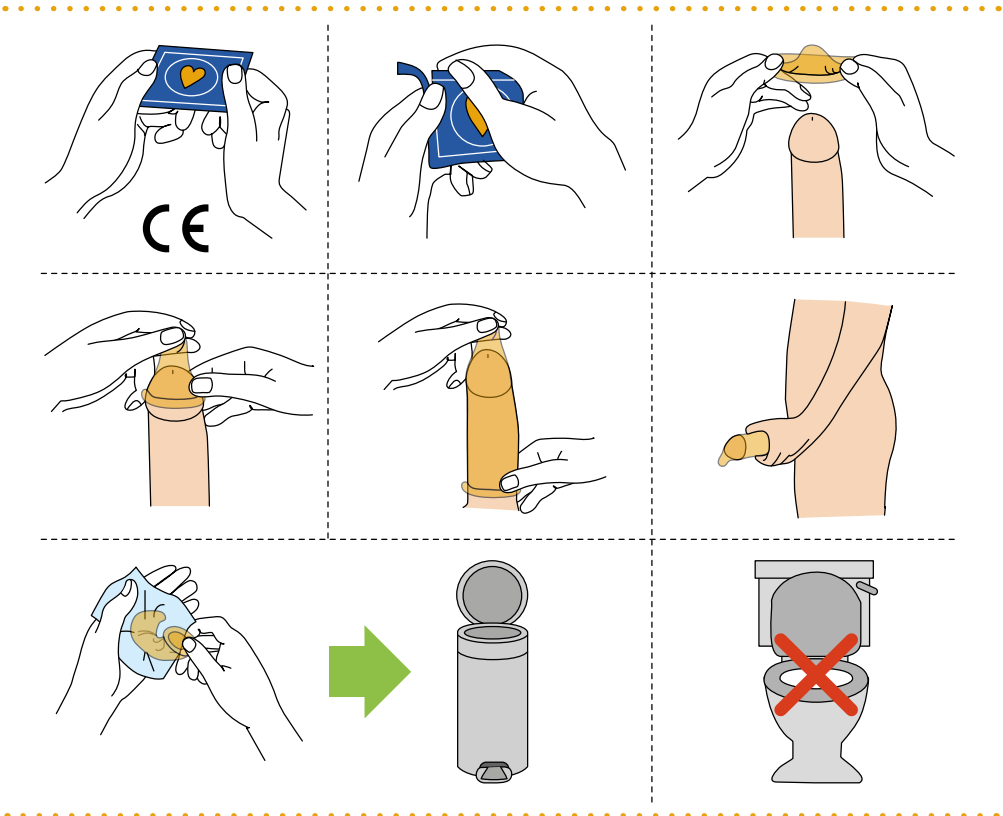
- Reading the instructions carefully, especially the first time you use a condom, and try it on your own to test it.
- Using only officially approved condoms (e.g. CE-marked in Europe, FDA in the USA), indicating that they have been tested and fulfill safety and efficacy requirements. Always check the expiration date of the condom.

- ✎ Gently open the package following the instructions without damaging the condom with nails or rings.

## WHEN AND HOW YOU SHOULD WEAR A CONDOM ( *Figure 5* )

- ✎ Insert the condom on the penis as soon as the erection is complete, not just immediately before ejaculation.
- ✎ Check that the rubber ring is on the outside so that the condom can be unrolled with ease.
- ✎ Hold the tip of the condom (to prevent the formation of an air bubble inside), as it works as a reservoir to collect the sperm, and unroll it down from the tip of the penis to cover the entire

 *Figure 5.* How to use a condom correctly






erected penis. Be assured that no air bubbles are entrapped inside that may break the condom.

- When removing the condom from the penis, hold the base firmly to prevent spilling out sperm accidentally.
- Once used, throw the condom in the bin and never dispose it in the toilet.

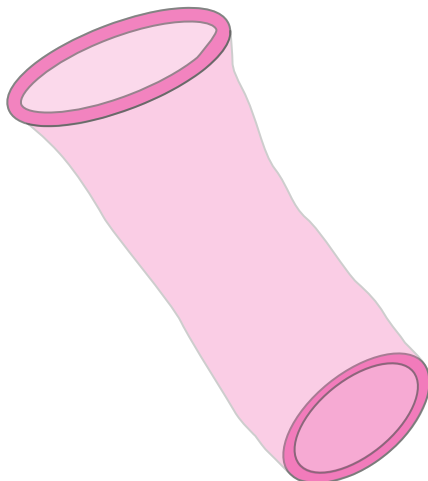
## THERE IS ALSO A FEMALE CONDOM

It is important to know that there is another contraceptive method that prevents transmission of STIs and HIV: the female condom, also called femidom. It is a transparent, soft and resistant sheath that is inserted into the vagina before sexual intercourse. It has the shape of a tube with two rings at the ends. The closed end is inserted into the vagina, the other end is open and remains outside the vagina (  *figure 6*).

It can be used with aqueous or oily lubricants (unlike the male condom which can be broken if used with oily lubricants). Similarly to the male condom, also the female condom can be used only once. The male condom cannot be used concurrently with the female condom.



*Figure 6.* Female condom




Female condoms are available in Europe since 1992, but remain poorly known in many countries. They can be found in pharmacies and ordered online.



## The main STIs

To most people, STIs are an extremely delicate topic, and as such it is not easy to find accurate information about STIs. In the following pages we try to briefly explain which are the most common STIs, how they can impact your life, and why it is important to avoid them or, if you are infected, identify them and cure them as soon as possible, in order to prevent serious damage.

### CHLAMYDIA (*Chlamydia trachomatis*)

Chlamydia is a disease caused by the bacteria *Chlamydia trachomatis* ( *summary table, p. 45*). It is the most common STI in Europe and the second most common STI globally after *Trichomonas vaginalis*. In Europe, it affects more women than men and over two thirds of all chlamydia cases are found in young people aged 15 to 24 years.

If not properly treated, 10-40% of women develop pelvic inflammatory disease, a disease that can cause infertility.


Chlamydia infection increases the likelihood of becoming infected with HIV.

You can become re-infected with chlamydia even if you have already been infected and effectively treated in the past.

### ► TRANSMISSION

The infection is transmitted through all types of sexual intercourse (vaginal, anal, oral) and can also be transmitted from the infected mother to the unborn child at the time of delivery.

## ► SYMPTOMS

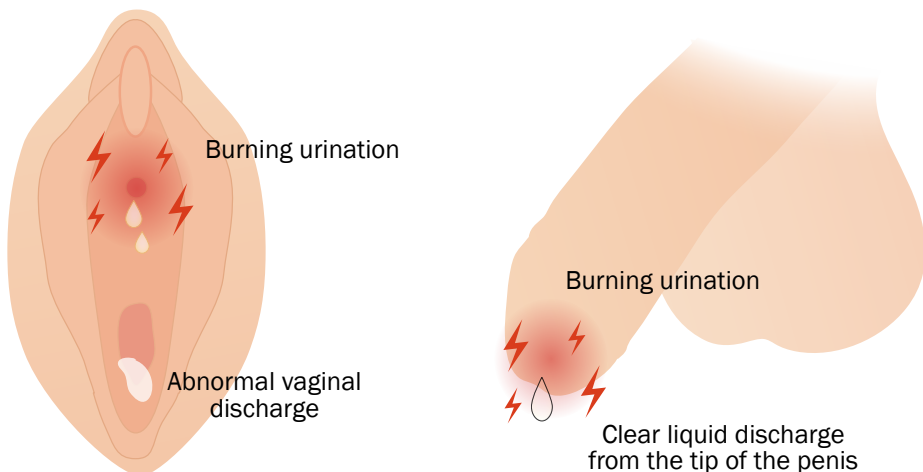
About 75% of the infected women and 25% of the infected men have **no symptoms** (  *figure 7*). When symptoms are present, they can be:

- **in women**, abnormal whitish/yellowish vaginal discharge, bleeding between periods, pain in the lower abdomen, pain during sex, urinary disorders;
- **in men**, burning urination, clear liquid discharge from the tip of the penis, redness of the glans (the terminal part of the penis), pain and swelling of the testicles;
- **in both**, if the infection is transmitted through anal intercourse, chlamydia can infect the rectum and cause anal pain, anal discharge and bleeding; if it is transmitted through oral sex, it can infect the throat and cause pharyngitis.

## ► DIAGNOSIS

The infection is diagnosed through a laboratory test that can be performed on urine sample or on rectal or pharyngeal swabs (in both

 *Figure 7*. Symptoms of chlamydia



sexes), on cervical swabs (in women), and in some cases on urethral swabs or sperm (in men).

It is advisable to do the laboratory test 10-20 days after unprotected sex.

## ► TREATMENT

Chlamydia is treated with specific antibiotics prescribed by your physician. It is recommended to always perform a follow-up test 4-6 weeks after completion of antibiotic therapy. If the test is positive, contact your physician again.

It is important to not have sex until the end of treatment to avoid transmitting the infection to your partner and then getting reinfected back by him/her. The therapy must be taken by both partners to make sure that the bacterium does not pass back and forth from one partner to the other.

All partners you had sexual contact with in the previous three months must be notified and referred to a specialist for a medical checkup and be treated if needed.

## ► THE RISKS


If left untreated, the infection can progress and have serious short- and long-term consequences. In particular:

- **in women**, an untreated infection can spread to the uterine tubes and cause pain in the lower abdomen; after years, it can cause problems during pregnancy and even lead to infertility.
- **in pregnant women**, the infection can be transmitted to the infant at the time of delivery and the baby can develop an infection of the eyes and lungs;
- **in men**, the infection can reach the testicles causing pain and fever and, more rarely, infertility;
- **in both sexes**, bacteria from the genitalia may be transferred by unwashed hands to the eyes and cause conjunctivitis.

## ► PREVENTION

- Follow the safe sex rules.
- A chlamydia test is recommended for all pregnant women.
- It is strongly recommended that sexually active women under the age of 25 be tested for chlamydia annually; also women of any age before initiating a new sexual relationship with a new partner should be tested for chlamydia.


## GONORRHEA (*Neisseria gonorrhoeae*)

Gonorrhea is a bacterial infection ( *summary table, p. 45*). It is the second most frequent STI in Europe after chlamydia, while it ranks third in the world after infection with *Trichomonas vaginalis* and chlamydia. In Europe, it affects more men than women. Half of all gonorrhea cases are recorded in men who have sex with men (MSM), and more than one third in young people aged between 15 and 24 years. If not treated properly, it can cause infertility in both women and men. Gonorrhea increases the likelihood of becoming infected with HIV. You can become re-infected with gonorrhea again even if you have already been infected and treated in the past.


## ► TRANSMISSION

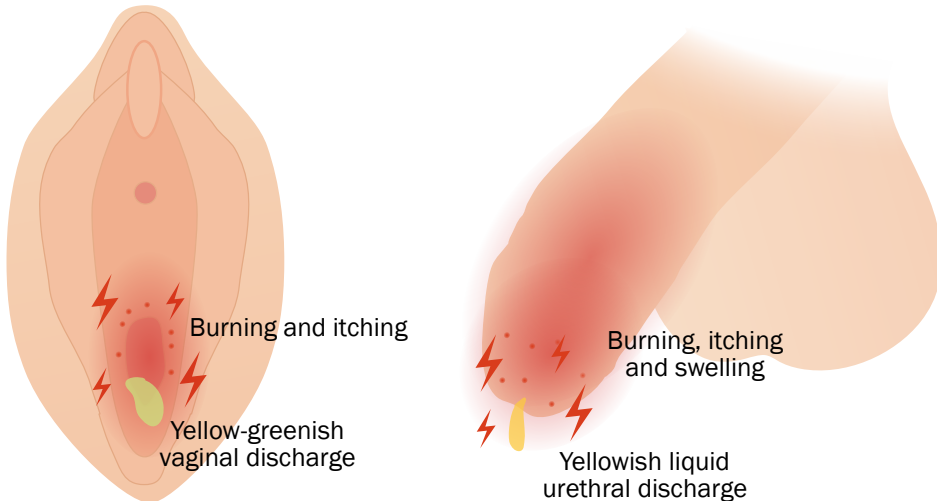
The infection is transmitted through all types of sexual intercourse (vaginal, anal, oral) and from the infected mother to the infant at the time of delivery.

## ► SYMPTOMS

About 20% of infected men and more than 50% of infected women have **no symptoms** ( *figure 8*). When symptoms appear, they can show as follows:

- **in women**, infection may present with genital itching, burning urination and yellowish-greenish vaginal discharge; external

 **Figure 8.** Symptoms of gonorrhea



genitals can become inflamed and sexual intercourse can be painful; in rare cases bleeding between periods and pain in the lower abdomen may occur;

- **in men**, burning, itching of the genitals and difficulty to urinate; abundant, often yellowish, discharge from the tip of the penis may be present as well as swelling and irritation;
- **in both sexes**, rectal infections are generally without symptoms but, if any, these can include discharge, anal itching, irritation, bleeding or painful intestinal movements; throat infection is possible and is without any symptoms in 99% of the cases.

### ▶ **DIAGNOSIS**

Laboratory tests can be done on rectal and pharyngeal swabs and on urine samples (in both sexes); on cervical/vaginal (including self-sampling) swabs (in women); on urethral swabs or on sperm (in men). The test should be done preferentially 2-5 days after unprotected sex.

## ► THERAPY

Gonorrhea is treated with specific antibiotics prescribed by your physician.

It is important not to have sex until the end of the treatment to avoid transmitting the infection to your partner and then getting reinfected back by him/her. The therapy must be taken by both partners to make sure that the bacterium does not pass back and forth from one partner to the other.

All partners you had sexual relations with in the previous month must be notified and referred to a specialist for a medical checkup and be treated, if needed.

## ► RISKS


If the infection is not treated, it may lead to several problems, in particular:

- **in women**, the infection can spread to the uterine tubes causing extrauterine pregnancies and infertility, even years after infection;
- **in pregnant women**, gonorrhea increases the risk of abortion or premature birth. The newborn can become infected during childbirth and develop conjunctivitis, with the risk of blindness, or inflammation of the joints;
- **in men**, the infection can cause inflammation in the testicles and, if left untreated, lead to narrowing of the urinary tract with consequent urinary difficulties and infertility;
- **in both sexes**, if left untreated, gonorrhea can slowly extend to the joints, muscles, tendons, heart and brain; in one case out of three, gonorrhea and chlamydia are contracted concurrently.

## ► PREVENTION

- Follow the safe sex rules.
- A gonorrhea test is recommended for pregnant women.

## **SYPHILIS (*Treponema pallidum*)**

Syphilis is a bacterial infection ( *summary table, p. 45*). It is the third most frequent STI in Europe after chlamydia and gonorrhoea and ranks fourth in the world after infection with *Trichomonas vaginalis*, chlamydia and gonorrhoea. In Europe, syphilis affects more men than women. Infections are typically seen in people over 25 years of age; 10% of cases are diagnosed in young people aged 15-24 years. About two thirds of cases are men who have sex with men (MSM). If left untreated, syphilis can cause severe damage to different organs, especially heart, brain, skin, bones, liver and arteries, months or years after infection.

Syphilis greatly increases the likelihood of becoming infected with HIV. You can contract syphilis again even if you have been infected and treated in the past.

### **► TRANSMISSION**

Syphilis is transmitted through all types of sexual intercourse (vaginal, anal, oral). An infected mother can transmit the infection to her child during pregnancy, childbirth and breastfeeding.

### **► SYMPTOMS**

The disease develops stepwise over time ( *figure 9*).

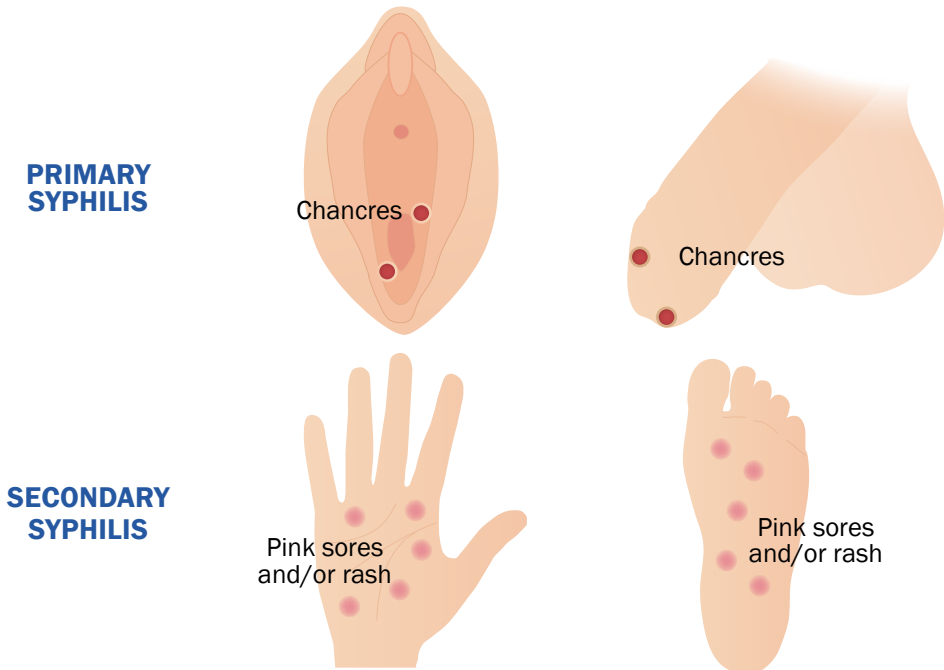
**PRIMARY SYPHILIS. 10-90 days after infection** a syphilis sore, the so-called **chancre**, appears on the genitals, or on the anus, mouth or throat. This ulcer disappears in a few days or at most in 3-6 weeks, but the disease continues its course without showing visible signs. If the infection is not treated at this stage, it evolves towards the secondary stage.

**SECONDARY SYPHILIS. Between 2 and 6 months** after infection, pink spots and/or a rash of various shapes appear on the skin. If left untreated, the disease evolves towards the latent stage.





Figure 9. Symptoms of syphilis



**LATENT STAGE.** After the spots and rashes disappear from the skin, the latent stage begins without any symptom. This period **can last up to two years**. At this stage, most people who receive proper care, recover. In the absence of correct care, the tertiary stage of the disease can develop.

**TERTIARY SYPHILIS.** **Can occur many years after the initial infection** (even 10-30 years later) if the disease is not treated, resulting in severe damage of many organs, especially heart, brain, skin, bones, liver and arteries.

### ► **DIAGNOSIS**

Laboratory tests to confirm syphilis diagnosis can be performed on blood, urine samples, and rectal and pharyngeal swabs (in both sexes); on cervical swabs (in women); on urethral swabs or sperm (in men).

It is advisable to do the test 10-90 days after unprotected sexual intercourse.

### ► THERAPY

The disease is treated with specific antibiotics prescribed by your physician.

It is important not to have sex until the end of the treatment to avoid transmitting the infection to your partner and then getting reinfected back by him/her. The therapy must be taken by both partners to make sure that the bacterium does not pass back and forth from one partner to the other.

All partners you had sexual relations with in the previous month must be notified and referred to a specialist for a medical checkup and be treated, if needed.


### ► RISKS

If not treated, the infection can progress from primary syphilis to tertiary syphilis and damage important organs.

### ► PREVENTION

- Follow the safe sex rules.
- It is important to perform tattoos or piercings only in specialized and certified centers.
- Testing for syphilis in pregnant women is recommended.

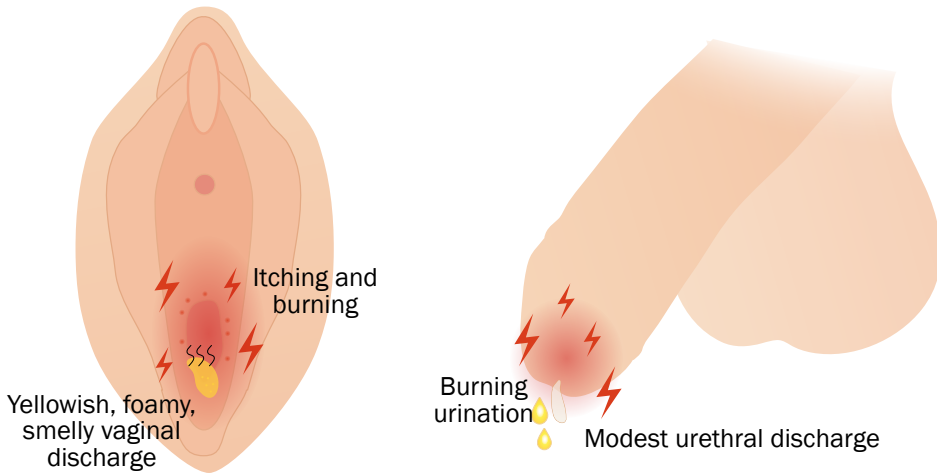
## TRICHOMONIASIS (*Trichomonas vaginalis*)

Trichomoniasis is a disease caused by a protozoan parasite ( *summary table, p. 45*). It mainly affects women but, unlike other STIs, it is equally frequent in all age groups.

Infection with *Trichomonas vaginalis* increases the likelihood of being infected with HIV and can be contracted again even if you have been infected and treated in the past.




*Figure 10.* Trichomoniasis symptoms



### ► TRANSMISSION

The infection is transmitted through all types of sexual intercourse (vaginal, anal, oral). It is also possible to get the infection through linen, towels, and sex toys contaminated with the protozoan.

### ► SYMPTOMS

10-50% of the cases are asymptomatic ( *figure 10*). When present, they can be as follows:

- **in women**, disease may present with itching or burning sensation in the external genitalia and vagina, and yellowish, foamy, smelly vaginal discharge;
- **in men**, disease may present with burning at urination and minor urethral discharge.

### ► DIAGNOSIS

Laboratory tests for trichomoniasis are performed on vaginal swabs (in women), urethral swabs (in men) or on urine samples (in both sexes).

It is recommended to take the test 4 days to 3 weeks after unprotected sex.

### ► THERAPY

The infection is treated with specific drugs prescribed by your physician.

It is important not to have sex until the end of the treatment to avoid transmitting the infection to your partner and then getting reinfected back by him/her. The therapy must be taken by both partners to make sure that the bacterium does not pass back and forth from one partner to the other.

All partners you had sexual relations with in the previous month must be notified and referred to a specialist for a medical checkup and be treated, if needed.

### ► RISKS


Untreated infections may lead to unpleasant health issues. In particular:

- **in women**, the infection can (very rarely) spread to the uterus and lead to infertility;
- **in pregnant women**, it may lead to premature birth and the newborn may develop a urinary tract infection;
- **in men**, it can cause penis irritation, inflammation of the prostate and, rarely, infertility.

### ► PREVENTION

- Follow the safe sex rules.
- Keep to good hygiene practices (do not share towels, underwear, or other personal hygiene items).

## GENITAL WARTS (human papillomavirus, HPV)

Genital warts are caused by the human papillomaviruses (HPV), a highly widespread group of viruses ( *summary table, p. 45*). There are over 120 types of HPV that affect different areas of the body; some types can also cause malignant tumors. More than 40 types affect the anogenital area (uterine cervix, vagina, vulva, rectum, urethra, anus, penis) presenting as irregular surface growths that can either disappear spontaneously within a few weeks, remain unchanged, or increase in number and size.

According to the probability of causing tumors, HPV types are divided into:

- **High risk HPV** (the most frequent types are 16 and 18), that can cause malignant tumors of the uterine cervix, anus, genitals, and also mouth, head, and neck;
- **Low risk HPV** (most common types are 6 and 11), that cause genital warts but not malignant tumors.


The age group most commonly affected is 15 to 24 years.

Genital warts increase the likelihood of becoming infected with HIV.

### ► TRANSMISSION

HPV is transmitted through all types of sexual intercourse (vaginal, anal, oral) and can also be transmitted from the infected mother to the newborn during childbirth.

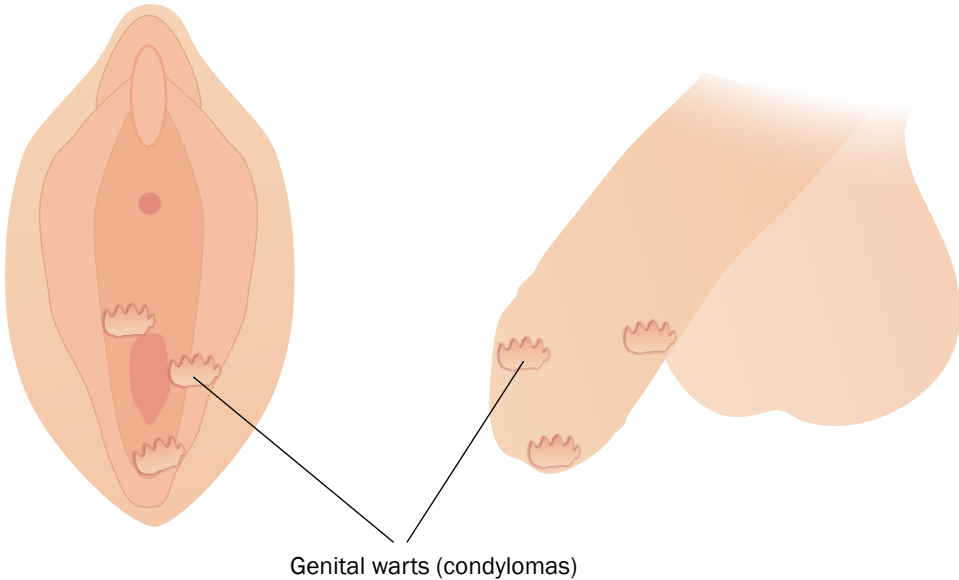
### ► SYMPTOMS

In both men and women, genital warts appear on the genitals and/or around the anus as irregularly-shaped, pink or brown "cauliflower-like" growths, called condylomas ( *figure 11*). Itching may occur in the affected areas. Condylomas can also develop around or inside the mouth in people with immune weakness (for example, in HIV-positive people).



*Figure 11.* Symptoms of genital warts

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### ► **DIAGNOSIS**

A specialist physician can make the diagnosis by observing the warts in the genital, anal or oral area. Warts appear about 1-3 months after unprotected sex. Laboratory tests on genital, rectal, and throat swabs are used to perform HPV detection and typing (to identify high or low risk HPV).

### ► **THERAPY**

The therapy depends on the type of growth, size and location of the wart. Warts can be treated by applying specific creams prescribed by your physician or removed, for example by laser or cryotherapy.

The treatment aims to destroy the virus completely in order to prevent reappearance of warts over time (months or even years later), although the virus may remain.

## ► RISKS


Genital warts can disappear spontaneously. Even if they remain unchanged in number and size over time, the risk of HPV transmission persists.

## ► PREVENTION

Follow the safe sex rules.

- ✎ It is recommended that teenagers of both sexes be vaccinated with an HPV vaccine before becoming sexually active; in several countries this vaccination is for free. Age and vaccination schedule may change depending on the country and type of vaccine used. The vaccines now available on the market provide protection against a number of high and low risk HPV types.
- ✎ Condom use reduces the risk of transmitting the infection if used consistently. However, the virus may be present in a genital area that is not protected by the condom (for example, big vaginal lips or groin). For these reasons, condoms may not fully protect you from getting genital warts.

## GENITAL HERPES (Herpes simplex virus)

Genital herpes is caused by the herpes simplex virus 1 (HSV1) or 2 (HSV2) ( *summary table, p. 45*). The infection is widespread all over the world and affects about one in 10 people.

Women are more often affected than men are. The virus can remain inactive in the body without visible symptoms and be reactivated in conditions of psycho-physical stress (like oral herpes, the so-called "cold sores").

Genital herpes greatly increases the chance of getting infected with HIV.

## ► TRANSMISSION

The infection occurs through all types of sexual intercourse (vaginal,

anal, oral). Oral herpes can be passed on from the mouth to the genitals through oral sex.

An infected mother can transmit the virus to the baby during childbirth or, more rarely, during pregnancy or breastfeeding.

## ► SYMPTOMS

In 80% of the cases, the infection doesn't show any symptom or fails to be diagnosed.

The virus acts in two stages. In the first phase of the disease, or **first outbreak**, sores may go unnoticed; they disappear within about 15 days. The HSV then remains in the body in a dormant state without symptoms. In 50-60% of the cases, the virus wakes up periodically (**recurrent outbreak** or **reactivation**) with symptoms similar to those of the first outbreak.

The reactivation of the dormant virus can be caused by various factors: stress, fever, menses, infections, exposure to sunlight, and minor traumas following sexual intercourse.

## FIRST OUTBREAK

The first outbreak may present with:

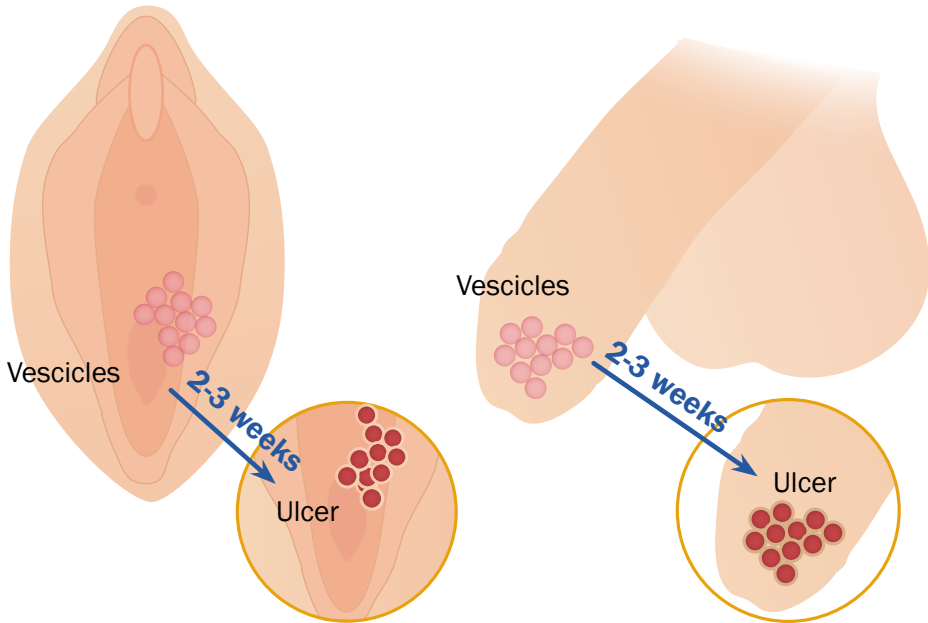
- itching, burning, pain in the genital area, pain when urinating, appearance of blisters and sores in the genital or anal area, 4-7 days after sexual contact;
- fever, general malaise, muscle pain;
- swelling of lymph nodes in the groin;
- inflammation of the rectum.

Two to three weeks after the first outbreak, the blisters turn into ulcers that heal within a few days ( *figure 12*).





Figure 12. Genital herpes symptoms



## RECURRENT OUTBREAKS (OR REACTIVATION)

About 70% of people who had a first outbreak have recurrent outbreaks, especially during the first year after infection.

In the first 2-3 years after the first outbreak, recurrent outbreaks can occur several times a year and present with the characteristic herpes blisters. The frequency of recurrences usually decreases in the following years but recurrences can continue to appear for many years.

### ► DIAGNOSIS

A specialist physician can often make the diagnosis by simply observing the sores and blisters in the genital area or elsewhere on the body (unless they have already disappeared).

The vesicles appear 2-13 days after exposure to unprotected sex.

## ► THERAPY

Antiviral drugs can reduce symptoms and the frequency of recurrent outbreaks, but they are not able to cure the infection permanently, therefore herpes outbreaks may return periodically.

## ► RISKS


Untreated infections may lead to health issues. In particular:

- **in women and men**, aseptic meningitis, arthritis and hepatitis;
- **in pregnant women**, neonatal infection (systemic infection; encephalitis; skin, eye and mouth infection).

## ► PREVENTION

- Follow the safe sex rules.
- Abstain from sexual contact if you or your partner have lesions on your genital areas.

## HIV (HUMAN IMMUNODEFICIENCY VIRUS)

HIV (human immunodeficiency virus) ( *summary table, p. 45*) is a virus that attacks the immune system and destroys the immune defenses over time until the body ability to defend itself from infections and tumors is completely depleted.

In 2018, almost 38 million people were living with HIV across the globe. Compared to 2000, the global number of new HIV infections and AIDS related deaths have strongly decreased but in some areas the infection is still on the rise. In Europe, HIV is spreading essentially through unprotected sexual contacts. In 2018, the highest rate of new HIV infections was reported in the age group 25-29 years.

HIV infection causes AIDS (Acquired Immunodeficiency Syndrome), a life-threatening condition that can't be prevented by a vaccine nor can be cured. However, treatment and prophylaxis with antiviral drugs can prolong life and reduce HIV transmission.

## ► TRANSMISSION

The virus is transmitted through all types of sexual intercourse (vaginal, anal, oral) and through blood contact (for example, by contaminated needles or syringes used for intravenous drug injection).

It can be transmitted from an infected mother to the baby during pregnancy, at birth and through breastfeeding.

## ► SYMPTOMS

Symptoms may not occur for a long time, even years. If left untreated, the disease will progress into AIDS. AIDS-related symptoms include infections, serious weight loss, tumors, and other health problems.

## ► DIAGNOSIS

The diagnosis is based on laboratory tests performed on a blood sample collected at least 20-40 days after exposure/risk behavior; the result is available in a few days. There are also tests that give the result in 15 minutes (rapid tests) that are done on a sample of either blood or saliva; they can be performed in clinics or other health care settings. Moreover, you can take the test at home (self-test) by buying a test kit in a pharmacy; these tests use saliva or a drop of blood taken by fingerprick and give the result in 15 minutes. For both the rapid test and the self-test, you have to wait 3 months after the risky behavior to have a reliable result.

## ► THERAPY

If the infection is timely discovered, therapy with antiviral drugs can be started immediately allowing the HIV-positive person to live longer with a good quality of life. This therapy is prescribed by a specialized physician or clinic.

However, it is good to know that these drugs should be taken for life and they don't eliminate the virus. So far, a cure or a vaccine that

would permanently clear or prevent from getting HIV have not yet been successfully developed.

Antiviral drugs can be used also to decrease the risk of infection after an accidental exposure to an HIV-positive source (post-exposure prophylaxis, PEP) or before an exposure to an HIV-positive contact (pre-exposure prophylaxis, PrEP).

### ► RISKS

If adequate therapy is not promptly started, the immune defenses will be weakened and AIDS will develop more rapidly.

### ► PREVENTION

- Follow the safe sex rules.
- It is important that tattoos and piercings are done in compliance with hygiene recommendations and in specialized certified centers.
- It is recommended that pregnant women get tested for HIV.



## Conclusions

In conclusion, today it is possible to prevent STIs. Here are some instructions:

- Put into practice the “Safe sex rules”, i.e., use the condom consistently and correctly, reduce the number of sexual partners, and always remain lucid in your choices when you intend to have sex.
- Consider the use of condoms as a sign of attention and care to your and your partner’s well-being, rather than a gesture of distrust towards him/her. Do not be embarrassed to suggest using a condom. Explain that you trust him/her, but that one or both of you may have had another partner who might have transmit-

ted an infection to you without knowing it. If this is too hard to express, say that it's better for both to play safe, not worry about anything and just enjoy the moment and the experience together.

- Seek medical care immediately (at a counseling center, an STI clinic, a gynecologist, an andrologist, a general practitioner, etc.) if you have even the slightest suspicion that you might be infected. Early diagnosis and access to correct therapy are essential to heal and avoid serious consequences that these infections can cause even years later.
- Call your National AIDS helpline or any local toll-free helpline that provides information on STIs, HIV and AIDS: experts will tell you what is the appropriate procedure or treatment in your specific case. For additional information you can visit the links reported at the end of this section.
- Those who have an STI have a higher risk of contracting or transmitting HIV and other STIs compared to those who don't have any. Therefore, if you have an STI, it is always important to do a test for HIV and other STIs as well.
- Remember that most STIs can be cured if antimicrobial medication is taken on time. For some STIs you can protect yourself with vaccines (for example, the HPV vaccine protects against genital warts).
- Finally, talk without embarrassment to your partner about your sexual experiences, including any STI that you had in the past. Discuss and decide together whether to get tested and what protective measures you should take.

A new romantic relationship, with all the emotions involved, can be difficult to associate with a health problem such as the risk of contracting an STI. These infections can seriously threaten your and your partner’s well-being, even years after your relationship. Therefore, it is essential that from today onward you are informed and aware of the risks and ways to prevent STIs in order to live your sex life without worries, making the right choices at the right time.

*Summary table.* The main STIs

DISEASE	MAIN SYMPTOMS	DIAGNOSIS	THERAPY
<i>Chlamydia trachomatis</i> infection (chlamydia)	<ul style="list-style-type: none"> <li>▶ <b>ASYMPTOMATIC:</b> 75% of women and 25% of men.</li> <li>▶ <b>Women:</b> abnormal whitish/yellowish vaginal discharge, bleeding between periods, pain in the lower abdomen, pain during sex, urinary disorders.</li> <li>▶ <b>Men:</b> burning urination, discharge from the tip of the penis, redness around the glans, swollen and tender testicles.</li> <li>▶ <b>Both sexes:</b> in case of anal intercourse, the rectum can be infected and cause rectal/anal pain, discharge and bleeding; in case of oral sex, infection of the throat can lead to pharyngitis.</li> </ul>	Laboratory tests on: <ul style="list-style-type: none"> <li>▶ urine sample</li> <li>▶ rectal swab</li> <li>▶ pharyngeal swab</li> <li>▶ cervical swab (women)</li> <li>▶ urethral swab (men)</li> <li>▶ sperm (men)</li> </ul>	Specific antibiotics
<i>Neisseria gonorrhoeae</i> infection (gonorrhea, the clap)	<ul style="list-style-type: none"> <li>▶ <b>ASYMPTOMATIC:</b> More than 50% women and 20% men.</li> <li>▶ <b>Women:</b> genital itching and discharge; burning urination; inflamed external genitalia; painful sexual intercourse; rarely, bleeding between periods and pain in the lower abdomen.</li> <li>▶ <b>Men:</b> burning and itching of the genitals; difficulty to urinate; abundant, yellowish discharge, swelling and irritation of the tip of the penis.</li> <li>▶ <b>Both sexes:</b> rectal infections are generally asymptomatic but may present with discharge, anal itching, irritation, bleeding or painful bowel movements; throat infections are asymptomatic in 99% of the cases.</li> </ul>	Laboratory tests on: <ul style="list-style-type: none"> <li>▶ urine sample</li> <li>▶ rectal swab</li> <li>▶ pharyngeal swab</li> <li>▶ cervical swab (women)</li> <li>▶ urethral swab (men)</li> <li>▶ sperm (men)</li> </ul>	Specific antibiotics

DISEASE	MAIN SYMPTOMS	DIAGNOSIS	THERAPY
<i>Treponema pallidum</i> infection (syphilis)	<p><b>PRIMARY SYPHILIS</b></p> <ul style="list-style-type: none"> <li>▶ <b>10-90 days after infection</b> a chancre (painless syphilis sore) appears on the genitals, anus, mouth or throat. The chancre disappears within 3-6 weeks, but the disease continues its course without visible signs. If the infection is not treated, it evolves towards the secondary stage.</li> </ul> <p><b>SECONDARY SYPHILIS</b></p> <ul style="list-style-type: none"> <li>▶ <b>2-6 months after infection</b> pink spots and/or rashes of various shapes appear on the skin. If not treated, the disease will evolve towards the latent stage.</li> </ul> <p><b>LATENT STAGE</b></p> <ul style="list-style-type: none"> <li>▶ After the pink spots and rashes disappear from the skin, the “latent stage” begins. This period shows no symptoms and may last up to two years. If properly treated, most people recover. In the absence of proper care, some of the infected persons can go on to develop the tertiary stage of the disease.</li> </ul> <p><b>TERTIARY SYPHILIS</b></p> <ul style="list-style-type: none"> <li>▶ In absence of proper treatment, the tertiary stage can develop many years (up to 10-30 years) after the infection was acquired. Severe damage to all organs can occur, especially heart, brain, skin, bones, liver, and arteries.</li> </ul>	<p>Laboratory tests on:</p> <ul style="list-style-type: none"> <li>▶ blood</li> <li>▶ rectal swab</li> <li>▶ pharyngeal swab</li> <li>▶ urine sample</li> <li>▶ cervical swab (women)</li> <li>▶ urethral swab (men)</li> <li>▶ sperm (men)</li> </ul>	Specific antibiotics
<i>Trichomonas vaginalis</i> infection (trichomoniasis)	<ul style="list-style-type: none"> <li>▶ <b>Asymptomatic:</b> 10-50% of the cases.</li> <li>▶ <b>Women:</b> itching or burning in the external genitalia and vagina; yellowish, foamy, smelly vaginal discharge.</li> <li>▶ <b>Men:</b> burning urination and modest urethral discharge.</li> </ul>	<p>Laboratory tests on:</p> <ul style="list-style-type: none"> <li>▶ urine sample</li> <li>▶ vaginal swab (women)</li> <li>▶ urethral swab (men)</li> </ul>	Specific drugs

DISEASE	MAIN SYMPTOMS	DIAGNOSIS	THERAPY
Human papillomavirus infection (genital warts)	<p><b>Both sexes:</b></p> <ul style="list-style-type: none"> <li>▶ Irregular, raised, pink or brown, "cauliflower-like" growth that appears isolated or grouped on the genitals and/or around the anus.</li> <li>▶ Itching may appear in the affected areas.</li> <li>▶ Can develop around or inside the mouth, or extensively, in people with immune weakness (for example, HIV-positive individuals).</li> </ul>	Diagnosis by a specialist physician	Specific cream applied directly on the growth, or removal (e.g. by laser, cryotherapy, etc.).
Herpes simplex virus infection (genital herpes, cold sore)	<p><b>ASYMPTOMATIC</b></p> <ul style="list-style-type: none"> <li>▶ 80% of the cases.</li> </ul> <p><b>FIRST OUTBREAK</b></p> <ul style="list-style-type: none"> <li>▶ Itching, burning, pain in the genital area, pain when urinating, appearance of blisters in the genital or anal area (2-13 days after unprotected sex).</li> <li>▶ Fever, general malaise, muscle pain.</li> <li>▶ Enlarged lymph nodes.</li> <li>▶ Inflammation of the rectum.</li> <li>▶ 2-3 weeks after their appearance, the vesicles turn into ulcers that disappear in a few days.</li> </ul> <p><b>RECURRENT OUTBREAKS</b></p> <ul style="list-style-type: none"> <li>▶ Occur in about 70% of people who have had a primary infection, usually within the year following the first outbreak.</li> <li>▶ In the first 2-3 years after the first outbreak, recurrent outbreaks manifested by the characteristic vesicles may occur several times a year, but their frequency usually decreases in subsequent years.</li> <li>▶ Recurrent outbreaks may continue to appear for years.</li> </ul>	Diagnosis by a specialist physician	Antivirals can decrease symptoms and frequency of recurrent outbreaks. However, they can't clear the infection permanently and recurrent outbreaks may occur.



DISEASE	MAIN SYMPTOMS	DIAGNOSIS	THERAPY
Human immunodeficiency virus infection (HIV)	After the HIV enters into the body, it stays silent (asymptomatic period) for years. Eventually, AIDS will develop and present with infections and tumors of various kinds.	<ul style="list-style-type: none"> <li>▶ Blood test (to be performed 20-40 days after unprotected sex): the result becomes available in a few days.</li> <li>▶ Rapid test (to be performed 3 months after unprotected sex): on saliva or a drop of blood taken by fingerprick; the result is ready in 15 minutes.</li> <li>▶ Self-test (to be performed 3 months after unprotected sex): the test kit can be bought in pharmacy, uses saliva or a drop of blood taken by fingerprick; the result is ready in 15 minutes.</li> </ul>	Antiviral drugs allow the HIV-positive person to live several years with a good quality of life. These drugs should be taken for life and do not eliminate the virus. Efforts to develop a cure or a vaccine to prevent HIV have not yet been successful. Post-exposure prophylaxis (PEP) or pre-exposure prophylaxis (PrEP) can be administered to decrease the risk of HIV infection.



## Useful links

- Find out where you can have a test for HIV or other sexually transmitted infections across Europe (ECDC): it only takes a few seconds to locate a testing site near you  
<https://ecdc.europa.eu/en/test-finder>
- Updated global information on Sexually Transmitted Infections (WHO) <http://www.who.int/mediacentre/factsheets/fs110/en/>
- Facts, global data, and Q&A on HIV (WHO)  
<http://www.who.int/hiv/en/>
- Sexually Transmitted Diseases - Adolescents and Young Adults (CDC, Centers for Disease Control and Prevention)  
<https://www.cdc.gov/std/life-stages-populations/adolescents-youngadults.htm>
- HIV/AIDS (CDC, Centers for Disease Control and Prevention)  
<https://www.cdc.gov/hiv/default.html>
- Sexually Transmitted Infections (ECDC, European Centre for Disease Prevention and Control)  
<https://ecdc.europa.eu/en/sexually-transmitted-infections-sti>
- HIV infection and AIDS (ECDC, European Centre for Disease Prevention and Control)  
<https://ecdc.europa.eu/en/hiv-infection-and-aids>
- IUSTI (International Union against Sexually Transmitted Infections)  
<https://www.iusti.org/>
- UNAIDS  
<http://www.unaids.org/>
- e-Bug project (Public Health England's – PHE Primary Care Unit England)  
<https://www.e-bug.eu/>

- CDC Fact Sheet: Information for Teens and Young Adults: Staying Healthy and Preventing STDs (CDC, Centers for Disease Control and Prevention)  
<https://www.cdc.gov/std/life-stages-populations/stdfact-teens.htm>
- Category Teen STDS & STIS (Teen help)  
<https://www.teenhelp.com/>
- Sexual Attraction and Orientation (TeensHealth)  
<https://teenshealth.org/en/teens/>
- STDs (Sexually Transmitted Diseases) (TeensHealth)  
<https://kids>
- STDS - Sexually Transmitted diseases (Teensource)  
<https://www.teensource.org/std>
- Iwannaknow - sexual health for teens and young adults (American Sexual Health Association)  
<http://www.iwannaknow.org/teens/sti.html>





## PART TWO

Love disease

## *Text*

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## *Drawings*

By Marianna Ignazzi, for the Scuola Romana dei Fumetti

IN A NEIGHBORHOOD SOMEWHERE, IN A CITY SOMEWHERE, ONE AFTERNOON...

I'VE BEEN THINKING ABOUT OUR RELATIONSHIP A LOT LATELY...

# LOVE DISEASE

...AND I DON'T THINK WE SHOULD GO ON LIKE THIS, VICTORIA...

ARE YOU LEAVING ME MATT?

I'M SORRY...



**SZAM!**









HAVE YOU GOT ANY NEWS FROM VICTORIA?

NONE AT ALL!



SINCE MATT BROKE UP WITH HER, SHE HASN'T ANSWERED MY PHONE CALLS OR WHATSAPP MESSAGES!

WE DEFINITELY NEED TO MAKE HER GO OUT...



I HAVE A PARTY AT MY HOUSE ON SATURDAY EVENING... BRING HER... BY FORCE, IF NEEDED!



SATURDAY EVENING...

NOW, GET DRESSED, DO YOUR MAKE UP AND GET READY, YOU'RE COMING WITH ME!

I ALREADY TOLD YOU I DON'T WANT TO...



WITH THIS ON, YOU'LL LOOK REALLY HOT... PUT IT ON!



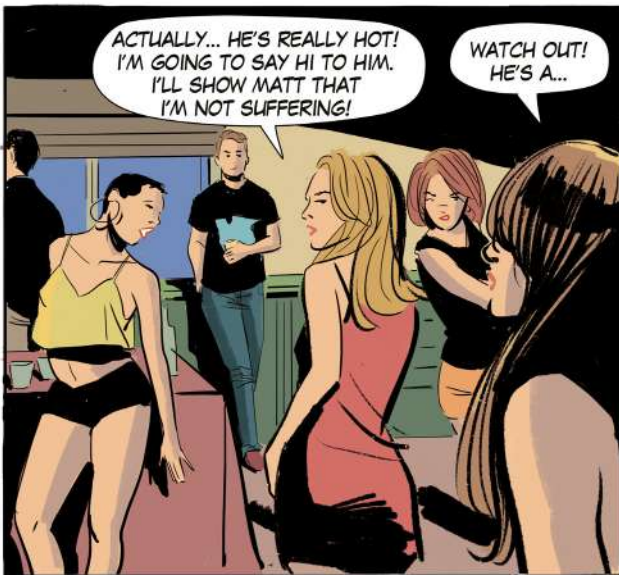
DON'T YOU THINK YOU'VE HAD A BIT TOO MANY DRINKS ALREADY, VICTORIA?



NAAA, I'M FINE!



...AND HE IS FINE TOO!...

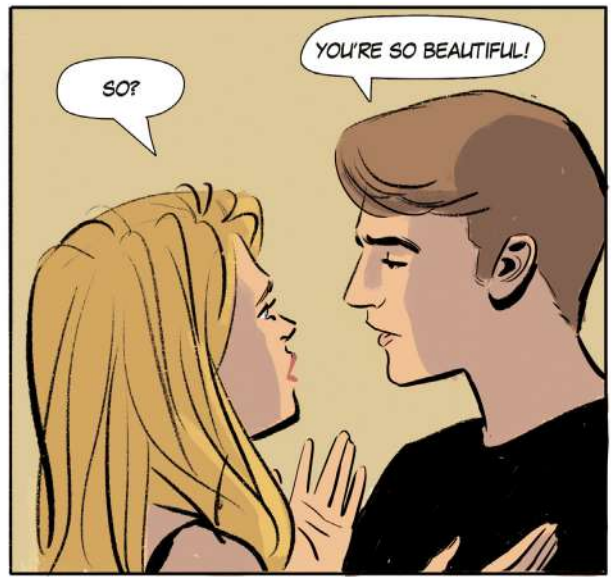


ACTUALLY... HE'S REALLY HOT! I'M GOING TO SAY HI TO HIM. I'LL SHOW MATT THAT I'M NOT SUFFERING!

WATCH OUT! HE'S A...



UGH... DO AS YOU PLEASE THEN!



A LITTLE BIT LATER...



DO YOU HAVE A CONDOM?



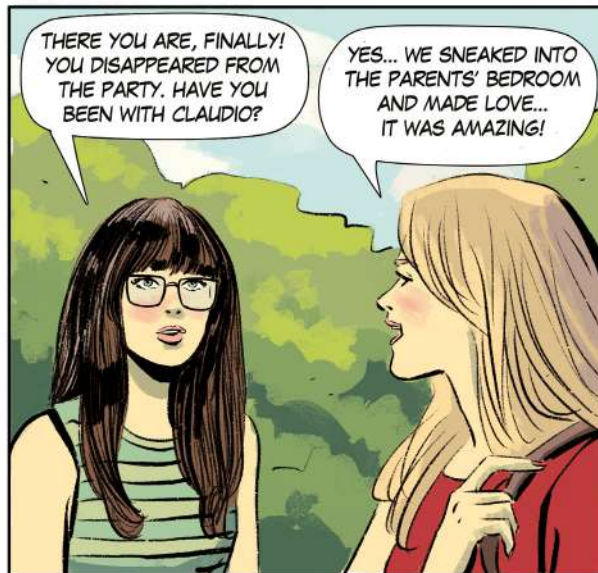
A FEW DAYS LATER...



VICTORIA!

THERE YOU ARE, FINALLY!  
YOU DISAPPEARED FROM  
THE PARTY. HAVE YOU  
BEEN WITH CLAUDIO?

YES... WE SNEAKED INTO  
THE PARENTS' BEDROOM  
AND MADE LOVE...  
IT WAS AMAZING!

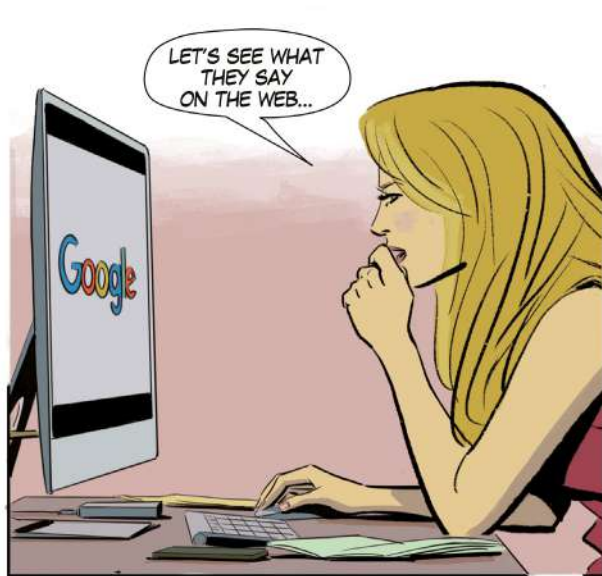


DID YOU AT LEAST  
USE A CONDOM?

YOU ARE REALLY RECKLESS!

NO, BUT  
FORTUNATELY I DIDN'T  
GET PREGNANT!





NEXT MORNING...

DOCTOR, DO YOU THINK THAT THEY ARE DUE TO THE FACT THAT I HAD UNPROTECTED SEX?

...UNFORTUNATELY YES AND IT IS PROBABLE THAT IT IS SYPHILIS. WE HAVE TO TAKE A SWAB SAMPLE ON THE MUCOUS MEMBRANE OF YOUR MOUTH SO WE CAN DETERMINE IF THEY ARE DUE TO THE BACTERIUM *TREPONEMA PALLIDUM* AND WE ALSO NEED A BLOOD SAMPLE...

COULD IT BE ANOTHER DISEASE?

SURELY THERE ARE OTHER DISEASES THAT HAVE SIMILAR SYMPTOMS, SOME OF THESE ARE CAUSED BY VIRUSES, OTHERS BY BACTERIA. IN YOUR CASE, THE LABORATORY TESTS WILL HELP US TO CONFIRM THE DIAGNOSIS...

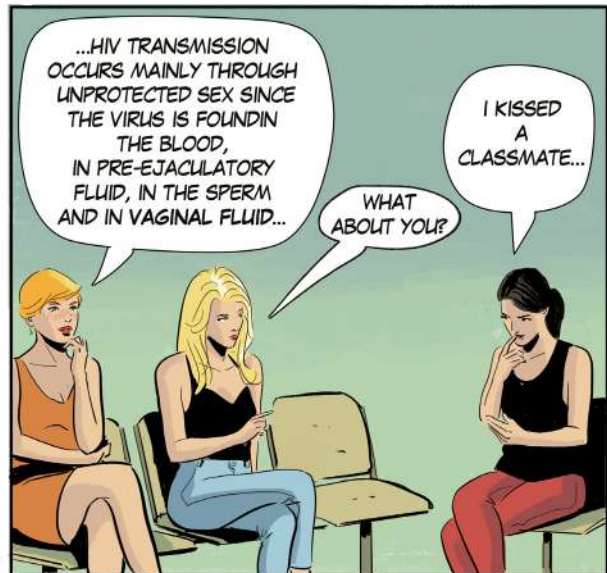
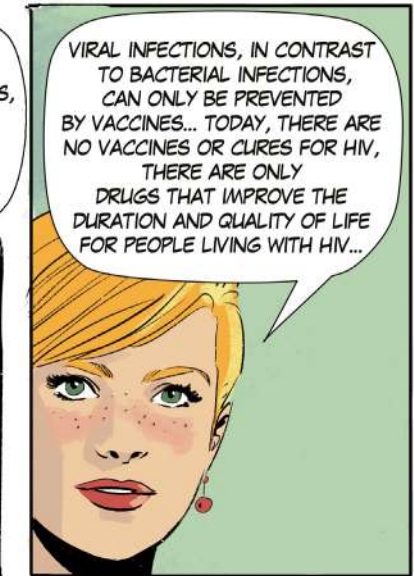
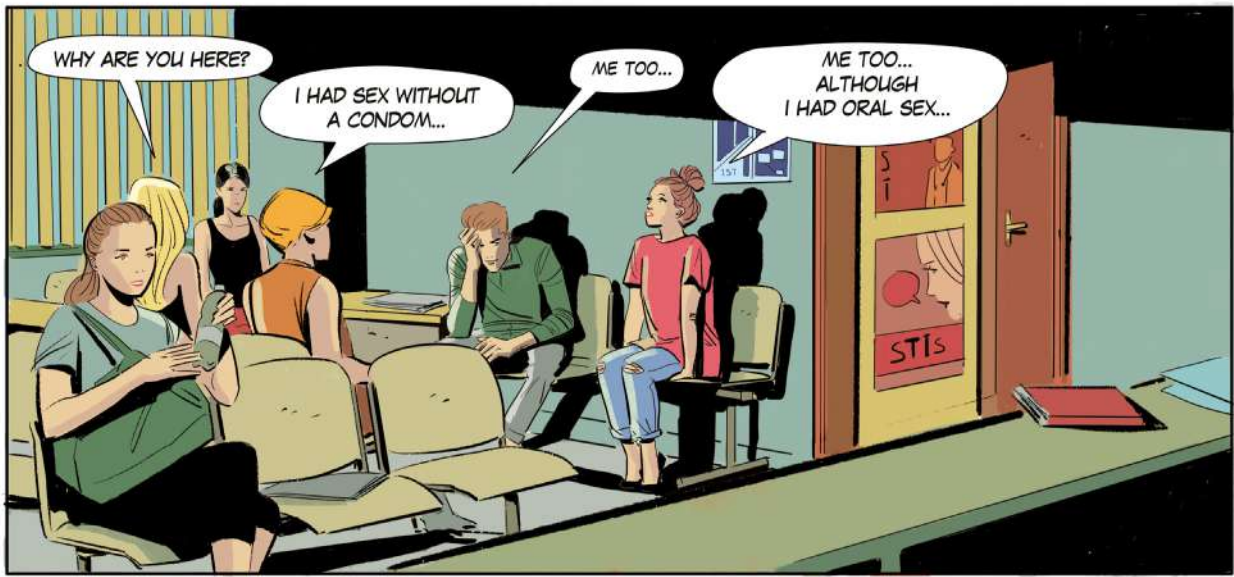
BUT WHAT OTHER DISEASES COULD I HAVE GOTTEN?

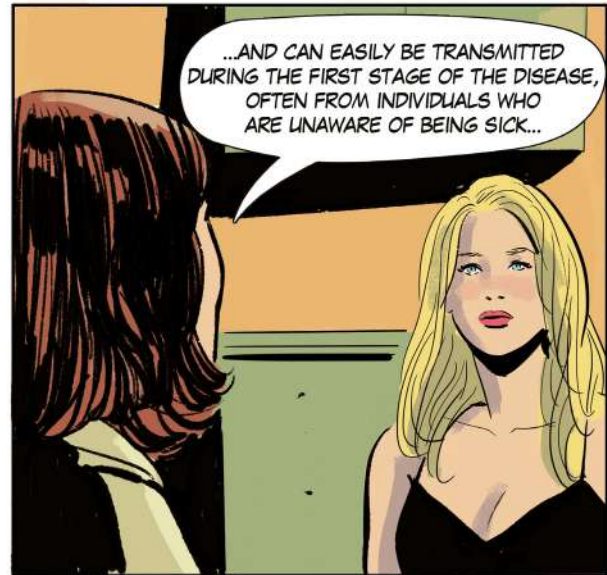
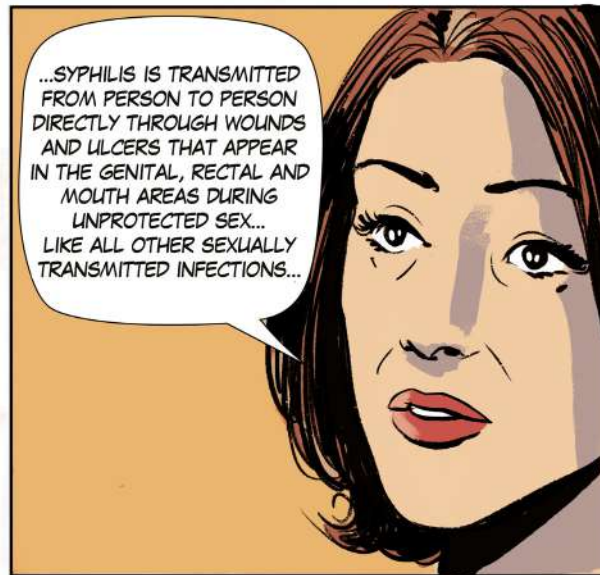
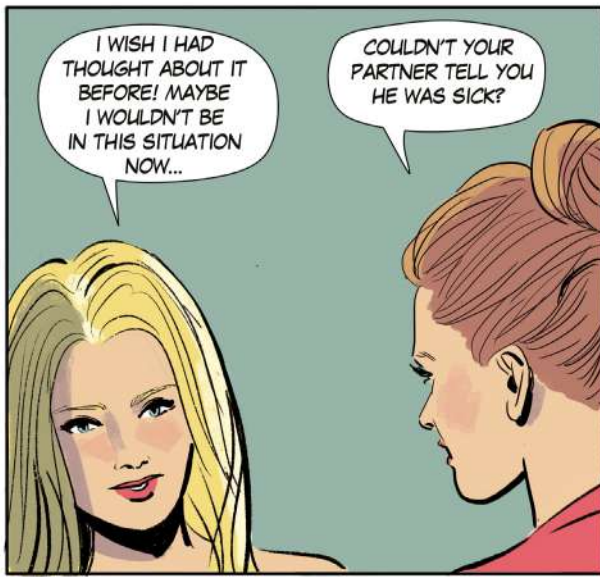
SOME OF THE POSSIBLE DISEASES ARE: GONORRHEA, GENITAL HERPES, PAPILOMAVIRUS AND IN THE WORSTCASE HIV OR VIRAL HEPATITIS...

...BACTERIAL INFECTIONS, LIKE SYPHILIS, CAN BE CURED IF TREATED IN TIME, WHEREAS FOR THE DISEASES CAUSED BY VIRUSES, WE CAN ONLY EASE THE SYMPTOMS... ANYWAY, WE WILL HAVE TO WAIT FOR THE LAB RESULTS TO SEE WHAT TO DO!

OK... I WILL DO THE TESTS AS SOON AS POSSIBLE AND COME BACK TO SEE YOU!









LET'S TALK ABOUT YOU NOW... UNFORTUNATELY, I HAVE TO CONFIRM THAT IT'S A CASE OF SYPHILIS...

OH, MY GOD...



...DON'T WORRY, WE WERE ABLE TO DETECT IT EARLY, SO IT CAN BE TREATED WITH SPECIFIC ANTIBIOTICS...

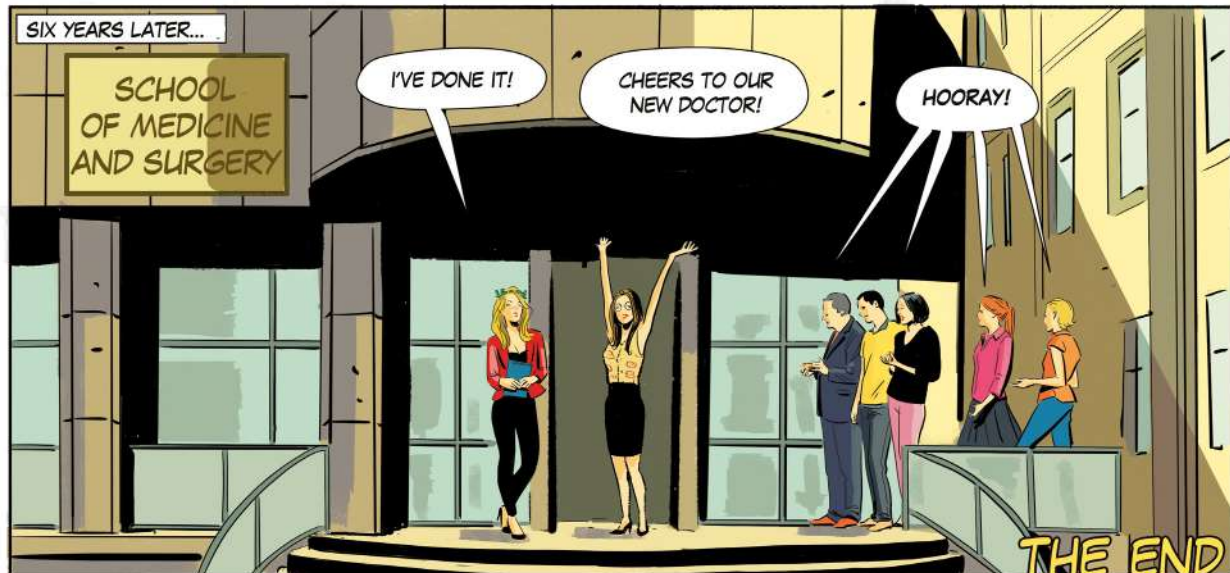


THAT'S ALL?

YOU HAVE CONTRACTED A SERIOUS ILLNESS BUT, FORTUNATELY, IT WAS DIAGNOSED IMMEDIATELY AND WILL NOT AFFECT YOUR FUTURE... NOW PLEASE... NO MORE UNPROTECTED SEX, ESPECIALLY WITH ANY OCCASIONAL PARTNER... GOT IT?



DON'T WORRY, I DON'T WANT TO BE SICK MY WHOLE LIFE FOR JUST ONE NIGHT OF SEX ... NOW I'M GOING TO HAVE ALWAYS CONDOMS WITH ME!



SIX YEARS LATER...

SCHOOL OF MEDICINE AND SURGERY

I'VE DONE IT!

CHEERS TO OUR NEW DOCTOR!

HOORAY!

THE END

# Glossary



## **AIDS**

Acquired immune deficiency syndrome (AIDS) is a disease of the immune system caused by the human immunodeficiency virus (HIV). HIV infection, if not properly treated, leads to a progressive reduction in the protection provided by the immune system, making people more exposed to infections and tumors. It's a disease that doesn't heal by itself. Early diagnosis of the infection and correct therapy allow most HIV-positive individuals to live long and have a good quality of life.

## **Birth control pill (the pill)**

Pharmacological contraceptive method that is administered orally; it is reserved for women and prevents pregnancy.

## **Cervical swab**

Used for examination of secretions and cells of the uterine cervix to identify several infectious agents, including some that cause STIs. To take the swab sample, a gynecologist introduces a speculum into the vagina that facilitates the insertion of the swab into the cervical canal, and collects material for laboratory analysis.

## **Complication**

Unfavorable evolution of a disease. Can occur even a long time after infection.

## **Condom**

A preservative and safe barrier method to protect oneself against STIs, including HIV. It must always be used correctly during all types of sexual intercourse (vaginal, anal, oral). It must be inserted on the erected penis as soon as erection is complete, not just immediately before ejaculation. It must never be reused, it must be of the right size and must be kept away from heat sources. Oils, vaseline, body lotions, edible oils and massage oils should never be used together

with a condom because they may cause the condom to break. Special water-based lubricants can be used instead.

### **Conjunctivitis, "pink eye"**

Inflammation of the eye's conjunctiva, a thin transparent membrane that covers the outer surface of the eye and the inner area of the eyelid.

### **Contagion**

Transmission of an infection from one individual to another. Can occur through different modes/mechanisms depending on the disease.

### **Dental dam**

Latex sheet used as a barrier to prevent transmission of STIs during oral sex.

### **Ejaculation**

Discharge of sperm from the urethral opening, located at the end of the penis. Ejaculation occurs when sexual arousal reaches a certain threshold and is often accompanied by an orgasm.

### **Female condom (femidom)**

Barrier method that protects against STIs including HIV. A transparent, soft and resistant sheath that is inserted into the vagina before sexual intercourse. It must never be reused, it can be used with oily and watery lubricants and shouldn't be used together with a male condom.

### **Incubation period**

Time that elapses between the entry of an infectious agent into our body and the onset of disease symptoms. During this period the infection can be passed on, even if there are no symptoms. Its duration can vary from hours to years, depending on the infective agent.

### **Immune system**

Network of different organs, tissues, cells, and proteins that defend our body from "invaders" such as viruses, bacteria, parasites, and other foreign agents. Other main functions are to remove damaged, aged or dead cells and tissues, and recognize and eliminate abnormal cells, such as cancer cells.

**Infertility**

Not being able to become pregnant or complete the pregnancy.

**MSM (Men who have Sex with Men)**

Males who engage in sexual activity with other males.

**Pelvis**

The lower part of the trunk of the human body between the abdomen and the thighs.

**Prevention**

Actions that have as their goal to protect and preserve the state of health and avoid the onset of diseases.

**Rectal swab**

Used to detect infectious agents, including some that cause STIs, in the anus. A swab is inserted 2-3 cm into the anus to collect material that will be analyzed in the laboratory.

**Risk factors**

Specific conditions associated with the acquisition of a disease that favor its development or accelerate its course. A certain behavior, a genetic trait, an environmental exposure or a lifestyle are risk factors.

**Throat swab**

Used to detect infectious agents, including some that cause STIs, in the secretion and cells from the tonsils and pharynx. A swab is inserted into the throat and rubbed gently to collect material for laboratory analysis.

**Transmission**

Transfer of germs between people. Describes the type of contact or the means that the infectious agent uses to pass from one person to another.

**Urethral discharge**

Secretion generally associated with the presence of an STI or the inflammation of the urogenital tract. Depending on the infection, it appears as a more or less abundant fluid of different density and color (transparent, whitish, yellowish, greenish). Sometimes it can be smelly.

### **Urethral swab**

Used to collect the secretion and cells inside the urethra (a small channel that connects the bladder with the exterior, through which urine passes) to identify infectious agents, including some that cause STIs. A swab is inserted (1 cm deep in women and 1-2 cm deep in men) through the opening of the urethra, and rolled gently to collect material for laboratory analysis.

### **Vaginal discharge**

Secretion generally associated with the presence of STIs or the inflammation of the urogenital tract. Depending on the infection, it appears as a more or less abundant fluid of different density and color (transparent, whitish, yellowish, greenish). Sometimes it can be smelly or foamy.

### **Vaginal swab**

Used for detection of infectious agents, including some that cause STIs in the vagina. A swab is introduced about 5 cm into the vagina to collect material for laboratory analysis.

## *A series to learn science while having fun!*

What are STIs? What are the diseases caused by sexually transmitted agents? What risks do you take when you have unprotected sex?

STIs, i.e. sexually transmitted infections, are globally widespread infectious diseases. If they are not treated in time, they can cause serious complications and, above all, increase the risk of contracting or transmitting HIV, the virus that causes AIDS.

Preventing STIs and safeguarding your current and future health is possible: just learn to recognize these diseases and follow the few but effective “safe sex rules”.

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### *Comic:*

#### *Love disease*

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