Englisch

HIV/AIDS, Hepatitis, and Sexually Transmitted Infections

Basic information on transmission, protection, diagnosis, and treatment | 2023

Deutsche Aidshilfe

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Content

ABOUT THIS BROCHURE

HIV/AIDS, Hepatitis, and Sexually Transmitted Infections provides information on the diseases and their causes, prevalence, routes of transmission and forms of protection, symptoms, progression, and effects as well as diagnosis and treatment. We have designed this brochure to contribute to prevention – being well aware that much more needs to be done, specifically creating conditions that promote preventive behaviours, testing, and treatment as well as non-discriminatory interaction.

HIV and AIDS

According to the Robert Koch Institute (RKI), more than 90,000 people in Germany were living with HIV at the end of 2021, with about 9,000 being unaware of their infection. Some 1,800 people became infected with HIV in 2021. Roughly 2,400 people were diagnosed with HIV in 2021; about one in three of these HIV diagnoses were made at a stage where the immune system had already been severely damaged, and one in six even when AIDS symptoms were already present.

However, with a timely diagnosis, and early treatment, HIV is manageable, and AIDS can be prevented today. But outdated ideas of illness, and early death remain widespread, and people with HIV are still being marginalised, and discriminated against. This leads to illness, and also stops people from getting tested.

This brochure provides factual information to address a lack of knowledge and misconceptions, fears, and prejudices. The most important messages: HIV medications enable people liv-

ing with HIV to live a long and healthy life, and with effective HIV therapy, HIV can no longer be sexually transmitted – making it possible to have sex and have children without fear of transmitting HIV. HIV-negative people can also take HIV medications to protect themselves from HIV infection.

Hepatitis A, B, and C

Several key populations for HIV prevention in Germany – mainly men who have sex with men, migrants from countries with high HIV prevalence, people who inject drugs and prison inmates – are also particularly affected by the viral liver infections hepatitis A, B, and C. Hepatitis B and C share routes of transmission with HIV, namely sexual transmission (hepatitis B, less commonly also hepatitis C) and blood-to-blood contact. There are also interactions between hepatitis B/C and HIV infection (hepatitis B is more likely to become chronic in untreated people with HIV and a low T helper cell count) as well as between some HIV and hepatitis medications.

Sexually transmitted infections

Widespread but mostly easily treatable sexually transmitted infections such as chlamydia, genital warts/HPV, gonorrhoea, herpes, and syphilis are also more common among some of the groups particularly affected by HIV. They can not only be harmful to health, but can also increase the risk of HIV transmission during sex with untreated people with HIV through inflammation, ulcers, and small mucosal lesions. At the same

time, it is important to know that condoms and internal condoms ("femidoms") not only provide protection from HIV, but also reduce the risk of other sexually transmitted infections. Getting tested and seeking treatment for sexually transmitted infections is just as important as it is for HIV.

Information on the terminology used

People use different body regions and genitals for various sexual practices. They often also use different terms for these body regions and genitals. The risk of HIV and other pathogens as well as the effectiveness of protective measures depend on the mucous membranes involved during sex. Studies, guidelines, and recommendations usually refer to them as the mucous membranes of the vagina, rectum, and penis. We also use these terms in this brochure – while being aware that not all people use these terms for themselves. For example, some trans* people reject the terms "vagina", "clitoris" or "penis" for themselves and choose to use other terms.

Protection from HIV, hepatitis, and sexually transmitted infections: Key facts at a glance

- Condoms (or internal condoms) during vaginal, and anal intercourse provide protection from HIV, and reduce the risk of most other sexually transmitted infections (→ p. 22).

- Avoiding contact with visibly changed or inflamed skin areas or wounds as well as preventing blood, semen, and other body fluids from entering the body further reduces the risk.

- Effective antiretroviral therapy of people with HIV reliably protects HIV-negative sexual partners from HIV infection (→ p. 25).

- Pre-exposure prophylaxis (PrEP) also provides HIV-negative people with reliable protection from HIV (→ p. 26).

- After a possible or probable exposure to HIV, post-exposure prophylaxis (PEP) can significantly reduce the risk of HIV infection (→ p. 28).

- Drug users can protect themselves from HIV and hepatitis through safer use practices, especially by only using their own, ideally sterile, syringes and other equipment (→ p. 27).

- Vaccination protects from hepatitis A, and B as well as the most common pathogenic HPV strains (→ p. 47 and p. 63).

- Since some sexually transmitted infections can be transmitted even when precautions are taken, (regular) screenings and treatment are important (including for partners).

HIV/AIDS

Key facts at a glance

- The human immunodeficiency virus (HIV) weakens the body's ability to fight pathogens, and defective body cells – if no HIV medications are taken.

- Antiretroviral drugs suppress HIV replication. When started early and continued lifelong, antiretroviral therapy (ART) provides best chances of having a normal life expectancy while being largely free from symptoms and preventing AIDS. However, ART cannot completely restore the immune system or remove the virus from the body.

- Without ART, HIV almost always leads to the development of AIDS and life-threatening conditions.

- HIV is difficult to transmit; there is no risk of infection in everyday life. Infections occur mainly during unprotected sex with untreated people with HIV (sex without condoms or internal condoms, treatment as prevention or pre-exposure prophylaxis/PrEP) and when sharing syringes and needles for drug use.

- Without ART, infections may also occur during pregnancy, birth, or breastfeeding.

- Infectivity (contagiousness) is particularly high when the virus is strongly replicating, such as in the first few weeks after infection. With stable and effective therapy, however, HIV cannot be sexually transmitted.

- Protection from HIV is provided by condoms and internal condoms, stable and effective antiretroviral therapy, pre-exposure prophylaxis (PrEP), and safer use practices. Transmission to babies can almost always be avoided through comprehensive medical supervision. Post-exposure prophylaxis (PEP) medication can strongly reduce the risk of HIV infection after risk exposure.

- A vaccine against HIV is unlikely to be available within the next few years, but medications that remain effective for several months will be introduced for PrEP.

- It usually takes two to four weeks after infection for viral components (antigens) and antibodies to become detectable in the blood by advanced laboratory tests (antigen/antibody tests); in some cases, it may take slightly longer. An infection can be reliably ruled out by a laboratory test no earlier than six weeks after the last risk exposure. Rapid tests that are also offered as self-testing kits for home use are subject to a safety period of 12 weeks after the last risk exposure.

What is HIV, what is AIDS?

HIV stands for *Human Immunodeficiency Virus*. Viruses have no metabolism and need host cells to replicate. HIV is a so-called retrovirus (which is also why HIV medications are called antiretroviral drugs). It carries its genetic material in the form of single-strand RNA, which is converted into double-strand DNA by the viral enzyme reverse transcriptase in infected cells and then incorporated into the human DNA. The infected cells then produce new viral components that "bud off" from the host cells and infect other cells as so-called virions.

HIV mainly attacks cells of the immune system. Without HIV therapy, the virus weakens the body's ability to fight pathogens and defective body cells, causing damage to organs such as the intestines, kidneys, bones, and the brain as well as the nervous system.

AIDS *(Acquired Immune Deficiency Syndrome)* is present if certain, sometimes life-threatening conditions occur, including severe infections such as Pneumocystis pneumonia or tumours such as Kaposi's sarcoma. One also speaks of AIDS if no symptoms are apparent, but the T helper cell count is below 200 per microlitre of blood serum. When started early and continued lifelong, antiretroviral therapy (ART) prevents AIDS and provides best chances of having a normal life expectancy while being largely free from symptoms. If AIDS is already present, ART can reverse the symptoms, allowing the immune system to recover.

Where does HIV come from?

Genetic analyses have shown that HIV originates from SIV. This virus is found in various monkey and ape species. SIV was probably transmitted to humans through contact with the blood of infected animals in the late 19th/early 20th century and then mutated into HIV. Subsequently, HIV may have spread not only through sexual contact but also through vaccination programmes, because at that time syringes and needles were reused to save costs. In the late 1960s, HIV then probably moved from Africa to Haiti, from where it spread to the U.S. and ultimately to the whole world.

There is a conspiracy theory that HIV was developed by humans (e.g. by the CIA or the KGB). But the first blood sample containing HIV originates from 1959, when scientists had neither the knowledge nor the possibilities to develop a virus. HIV was also not spread in Africa through contaminated polio vaccines: A sample of these vaccines tested in 2000 showed no presence of the virus.

By the way: In the 2000 Durban Declaration, thousands of scientists and physicians from all over the world, among them several Nobel Prize winners, affirmed and substantiated by evidence that HIV is the cause of AIDS.

Epidemiology

According to the Robert Koch Institute (RKI), some 1,800 people in **Germany** became infected with HIV in 2021. Slightly more than half of these infections were attributed to unprotected sex between men, about one-quarter to unprotected sex between men and women and about one in six infections to the shared use of syringes and needles for drug use.

Roughly 2,400 people were diagnosed with HIV in 2021; about one in three of these HIV diagnoses were made at a stage where the immune system had already been severely damaged and one in six even when AIDS symptoms were already present.

At the end of 2021, about 91,000 people in Germany were living with HIV – with about 9,000 being unaware of their infection.

According to UNAIDS, about 1.5 million people **worldwide** became infected with HIV in 2021. The primary route of transmission is unprotected sex between men and women. The groups particularly affected (to varying extents depending on the region) include girls and young women, sex workers, intravenous drug users, gay men and other men who have sex with men (MSM), trans* people and sexual partners of people from these groups.

At the end of 2021, a total of roughly 38 million people were living with HIV; about 650,000 people died from the consequences of AIDS in 2021.

Transmission

HIV can only be transmitted if sufficient amounts of the virus enter the body:

- through mucous membranes along with cells that can absorb and release HIV (rectum, vagina, uterine cervix, inside of the penile foreskin, penile frenulum, and entrance to the urethra),
- through broken skin areas (e.g. herpes ulcers), or
- directly through blood (e.g. when injecting drugs).

In people living with HIV who are not receiving ART, the amount of HIV is very high in the blood, in semen, in the liquid film on the mucous membranes of the rectum and the vagina, in breast milk as well as in pus.

Infections then occur mainly during sex without a condom or pre-exposure prophylaxis (PrEP) **(→ p. 22)**. This is also possible without semen, blood, or other body fluids entering the body, namely through direct intensive contact between mucous membranes (e.g. penis and vagina/uterine cervix or penis and rectum).

HIV can also be transmitted when sharing syringes and needles for drug use. If no protection is provided by HIV therapy, HIV transmission is also possible during pregnancy, birth, or breastfeeding; however, such infections hardly ever occur in Germany.

The amount of HIV in saliva, sweat, lacrimal fluid or excretions is not sufficient for an infection. Therefore, there is no risk of transmission when kissing, hugging or shaking hands, coughing or sneezing, sharing plates, glasses or cutlery, toilets, towels or bedding, in public swimming pools or saunas or when working and living together with people with HIV. HIV is also not transmitted via insects or animals.

In medical treatment and nursing care, tattooing and piercing, acupuncture, manicure, and pedicure as well as in first aid, protection is provided by the standard hygiene and protective measures.

Sexual transmission

HIV is most commonly transmitted during unprotected sex with untreated people with HIV. In this case, the statistical risk of transmission during a single unprotected sexual contact (penetrative/receptive vaginal or anal intercourse) is about one percent. By comparison: Up to 50 percent of unprotected sexual contacts with people infected with gonorrhoea and about 30 percent of unprotected sexual contacts with people infected with syphilis lead to an infection.

The risk increases with the number of such contacts ("cumulative risk"). The risk can also be increased by unfavourable factors, such as when the amount of HIV in the body is very high. Inflammatory sexually transmitted infections increase

the risk as well: HIV can leave or enter the body more easily through inflamed mucous membranes.

In people living with HIV who are not receiving ART, additional infected immune cells migrate to the infection sites. They can transmit HIV, thus increasing the amount of HIV in the mucous membranes and the mucus. In HIV-negative people with a sexually transmitted infection, additional immune cells also migrate to the infection sites – they can easily absorb and transmit HIV to other cells.

Anal intercourse

Anal intercourse without a condom or internal condom, treatment as prevention, or pre-exposure prophylaxis (PrEP) **(→ p. 22)** is the sexual practice associated with the highest HIV risk: The rectal mucosa is highly sensitive, which is why minor injuries can easily occur during sex; this risk increases with longer and "rougher" sex. In addition, the intestinal mucosa contains many immune cells that can easily absorb and transmit HIV. In untreated people living with HIV, the amount of HIV in the liquid film on the intestinal mucosa is therefore very high. During receptive anal intercourse, the risk of infection is about two to three times as high as during penetrative anal intercourse.

Vaginal intercourse

Vaginal intercourse without a condom or internal condom, treatment as prevention, or pre-exposure prophylaxis (PrEP) **(→ p. 22)** is the sexual practice associated with the second highest HIV risk. The risk for the receiving partner is higher than for the penetrating partner: The vaginal mucosa has a larger surface area than the penile mucosa (this area is once again reduced if the penis is circumcised), and semen remains longer in the vagina than vaginal secretion on the penis.

Oral intercourse

Oral intercourse (sucking or licking the penis, vulva, vagina or anus) only involves an HIV risk for the licking/"blowing" person if large amounts of the virus enter the body through the mouth with semen or blood; even in that case, however, the risk is very low. The oral mucosa is much more stable and resistant than the rectal or vaginal mucosa, fluids containing the virus are diluted by the saliva, and semen does not remain in the mouth as long as in the vagina or rectum. Only a few cases of HIV transmission during oral intercourse have been reported worldwide.

Transmission through blood-to-blood contact

The HIV risk is very high when syringes (especially for drug use) are used by several persons, because the virus directly enters the bloodstream. In some cases, HIV can survive for several days in traces of blood inside the syringe. By contrast, no case of HIV infection through needlestick injury from a discarded needle (e.g. in a playground) has been reported worldwide.

There is also an HIV risk through tattooing and piercing if instruments are used for several persons and are not disinfected.

Blood and blood products (e.g. for surgeries) are very safe in Germany due to various measures (especially testing).

Transmission to the baby

Without protective measures, the risk of transmitting HIV to the baby during pregnancy, birth, and breastfeeding is about 20 percent. Transmission to the baby can be prevented by taking HIV medications and, if necessary, further measures **(→ p. 28)**.

Protection

Condoms and internal condoms (→ p. 22), treatment as prevention (→ p. 25), and pre-exposure prophylaxis (→ p. 26) provide reliable protection from sexual transmission of HIV. Transmission during drug use can be prevented through safer use practices (→ p. 27) and transmission to babies can be prevented by taking HIV medications and further measures (→ p. 28).

After potential contact with HIV, post-exposure prophylaxis (PEP, → p. 28) started within 48 hours can significantly reduce the risk of infection.

Protection from sexual transmission of HIV

Reliable protection from sexual transmission of HIV is offered by condoms and internal condoms, effective antiretroviral therapy (treatment as prevention), and pre-exposure prophylaxis (PrEP).

Condoms and internal condoms ("femidoms")

Condoms and internal condoms during vaginal and anal intercourse provide protection from HIV and reduce the risk of other sexually transmitted infections.

Correct use of condoms

When used consistently and correctly, (external/internal) condoms provide protection from HIV and reduce the risk of other sexually transmitted infections:

- Use condoms that bear the CE marking and are imprinted with DIN EN ISO 4074. Pay attention to the use-by date and any damage to the packaging.

- Internal condoms ("femidoms") consist of an about 18-cm-long, thin, tearproof polyethylene or polyurethane sheath closed at one end with a ring at each end. The outer ring remains outside the vagina and covers the outer vaginal lips, the inner ring is inserted into the vagina and covers the mouth of the cervix and the cervix. Internal condoms can also be used during anal intercourse. They enable the receiving partner to initiate the use of a barrier method. In addition, they offer an alternative when the erection cannot be maintained while putting on a condom, since they can already be inserted long before the intercourse.

- Do not use any sharp objects (knife, scissors) or your teeth to tear open the packaging. Be careful with long fingernails!

- Do not put on the condom until the penis is erect. If necessary, pull back the foreskin and place the condom on the head of the penis (glans) with the ring facing outwards. Pinch the reservoir tip with one hand to remove any air pockets, then fully unroll the condom with the other hand.

- Never put two condoms on top of each other – they will rub against each other and can easily tear or slip off.

- Always use a sufficient amount of fat-free lubricant during anal intercourse and in the case of vaginal dryness. Fat-based products such as Vaseline, massage oil, or body lotion are not suitable – they can weaken condoms.

- Put on the condom before applying the lubricant. Never apply lubricant onto the penis before putting on an external condom, because the condom may otherwise slip off or tear.

- Check with your hand from time to time whether the condom is still in place.

- After sex, pull out the penis from the vagina or rectum while still erect, holding on to the condom at the rubber ring.

Treatment as prevention

HIV medications suppress HIV replication in the body. The number of HIV copies in the blood, semen as well as in the liquid film on the mucous membranes of the vagina, penis, and rectum is then very small.

Major scientific studies demonstrate that HIV cannot be sexually transmitted by a person living with HIV on stable and effective HIV therapy[1].

Treatment as prevention requires taking medications as prescribed and undergoing regular medical check-ups.

Treatment as prevention also means that people with HIV on stable and effective ART can become parents without fear of transmitting HIV to their partners and children. Vaginal delivery and breastfeeding are possible, too. Temporary increases in viral load in the blood to values ranging between 50 and 1000 copies/ml were quite common in the studies, but did not lead to transmission. By contrast, if the viral load in the blood increases permanently during the therapy, for example because the medications are not taken as prescribed or are no longer effective, the viral load in the genital and rectal secretions also increases, and so does the risk of transmission.

1 *HIV therapy is considered effective if the viral load in the blood is below the so-called detection limit for at least six months. Today, the HIV detection limit usually ranges between 20 and 40 copies/ml, whereas it was at 200 copies/ml in most scientific studies attesting to the effectiveness of treatment as prevention.*

Pre-exposure prophylaxis (PrEP)

In pre-exposure prophylaxis (PrEP, prevention before potential contact with HIV), HIV-negative people are taking HIV medications to protect themselves from HIV infection. PrEP can be taken daily or as an event-driven regimen. When taken as prescribed, it provides reliable protection from HIV (but not from other sexually transmitted infections).

PrEP with an HIV medication that combines the active ingredients emtricitabine and tenofovir has been shown to be highly effective in particular in gay men at high risk for HIV. In the cells of the vaginal mucosa, tenofovir does not accumulate as well as in the rectum. It therefore takes longer for sufficient HIV protection to build up here and strict patient compliance is required to maintain the protection – event-driven PrEP is not recommended for receptive vaginal intercourse.

Reliable protection from HIV is also provided by a long-acting injectable PrEP with the antiretroviral cabotegravir.

To date, only limited data is available on the effectiveness of PrEP in drug users. However, it can be indicated in individual cases where sterile injection equipment is not available (especially in prison).

Before starting PrEP, medical examinations and an HIV test are required to reliably rule out an HIV infection, because if an HIV infection is already present, the active ingredients of PrEP medications are not sufficient for treatment and the virus can become resistant to these important medications. For this reason, HIV tests also need to be performed four weeks after starting PrEP and then every three months. In the event of an

infection despite PrEP (for example, because the PrEP medications were not taken as prescribed), PrEP has to be discontinued and replaced by full HIV therapy.

PrEP includes regular medical check-ups; in addition, regular screenings for sexually transmitted infections are recommended.

Safer Use

"Safer use" practices make drug use safer – for example, they reduce the risk of HIV transmission, but also the risk of overdose or dangerous interactions.

The key rule to ensure protection from HIV as well as hepatitis and other infections when injecting drugs: Only use your own syringe, needle, and equipment for each instance of drug use. Many drug counselling centers offer sterile injection equipment and sets with sterile spoons, single-use filters, and sterile water. In some cities, such equipment is also available from vending machines. In addition, alternative forms of drug use such as snorting or foil smoking reduce the risk of infection; corresponding equipment (such as uncoated foils or snorting tubes) is also provided by many drug counselling centres.

If sterile injection equipment is not available (e.g. in prison), used injection equipment should be disinfected as much as possible. HIV PrEP (→ p. 26) may also be indicated.

Prevention of transmission to babies

In Germany, all pregnant persons must be offered an HIV test; if this does not happen, they should address this topic themselves. The performance of the test (but not the result) is documented in the maternity record.

Transmission of HIV to the baby can be prevented by antiretroviral therapy of pregnant persons with HIV and by taking further measures, if necessary (e.g. scheduling a Caesarean section before going into labour and treating the newborn baby with preventive ART for up to four weeks).

Under specialised medical and interdisciplinary supervision, pregnant persons on effective ART can also give birth vaginally and breastfeed their babies. The advantages and possible disadvantages should be discussed with the medical specialist and the decisions should be made together.

Post-exposure prophylaxis (PEP)

After contact with ("exposure to") an amount of HIV that is sufficient for infection – for example after a needlestick injury with a needle contaminated with HIV-positive blood, unprotected sex with an untreated person with HIV or when sharing syringes and needles for drug use – post-exposure prophylaxis ("prevention after contact with HIV") can usually prevent HIV from settling in the body and the onset of an infection. PEP should ideally be started within two hours, if possible within 24 hours, but no later than 48 hours after the

risk exposure. Contact details of hospitals offering PEP can be found at www.kompass.hiv/en, category: PEP point.

Circumcision

According to studies, circumcision of the foreskin reduces the risk of HIV infection during penetrative vaginal intercourse by up to 60 percent, especially because the surface area of the penile mucosa is reduced and the part of the foreskin that is rich in HIV target cells is removed. Whether or not circumcision also reduces the risk during anal intercourse has not been scientifically clarified. It should be considered that many men who have sex with men (MSM) practice both penetrative and receptive anal intercourse.

Caution: Highly error-prone strategies

Some strategies aimed at reducing the HIV risk during sex without condoms or internal condoms, treatment as prevention, or PrEP are in fact associated with a high HIV risk:

Selecting sexual partners with the same HIV status

The idea behind this strategy: people with HIV are already infected and HIV-negative people cannot transmit HIV. To this end, however, the current HIV status must be known. This is often not the case, though, for example because a current HIV test result is not available – about 9,000 people in Germany are infected with HIV without being aware of their infection.

Selecting the sexual role in anal intercourse by serostatus

In this strategy, the HIV-positive partner takes the receptive ("passive") role and the HIV-negative partner takes the penetrative ("active") role. Although the risk during penetrative anal intercourse is indeed lower than during receptive anal intercourse (→ p.19), it is still high. Furthermore, there is no obligation in Germany to inform sex partners about an HIV infection.

Coitus interruptus ("pull-out method")

The attempt to pull out the penis from the body before ejaculating often fails. Moreover, if the mucous membranes contain large amounts of HIV, HIV transmission is also possible without ejaculation (in both directions), namely due to the friction between the mucous membranes of the penis and the rectal or vaginal mucosa.

Symptoms | Progression | Effects

Shortly after infection, the virus temporarily replicates at a very high rate, in particular in the so-called CD4 helper cells which play an important role in controlling the immune system. This causes the number of immune cells in the intestinal mucosa to be reduced significantly, especially of those cells which represent the immunological memory (memory cells). This damage cannot be fully reversed by antiretroviral therapy.

On average, the maximum viral load in the blood and in semen is reached two and a half weeks and one month after infection, respectively. Due to the large amount of virus in the blood, semen, and the genital and rectal mucosa, the risk of infection is particularly high in this phase.

When the viral load in the blood increases, non-specific symptoms occur in the majority of the cases (referred to as primary infection, e.g. fever, exhaustion, fatigue or malaise, lack of appetite, headache, joint pain, heavy night sweats, swollen lymph nodes, skin rash, diarrhoea, pain when swallowing, or ulcers in the mouth). These symptoms usually subside after seven to ten days and are often mistaken for symptoms of flu or a travel-related disease.

The infection triggers an immune response in all infected persons, producing antibodies against HIV. They are usually detectable from about the third week after infection **(→ p. 32)**.

The acute infection phase is followed by a stage with no or only mild symptoms, which can last for several months to many years. But the virus continues replicating, causing damage to the immune system and internal organs such as the kidneys, the bones and the brain as well as the nervous system. The number of T helper cells and their functionality increasingly decline as the condition progresses.

Initially, the ensuing symptoms usually include non-specific disturbances in general well-being, skin and mucosal changes, gastrointestinal disorders (e.g. diarrhoea), persistent swelling of lymph nodes in several body regions, fever attacks, night sweats, and increased susceptibility to infections or longer recovery periods. This phase may be followed by a phase

completely or largely free from symptoms. In some cases, complications may occur suddenly even though the person previously appeared to be completely healthy.

Once HIV has damaged the immune system to such an extent that life-threatening conditions such as Pneumocystis pneumonia or certain tumours such as Kaposi's sarcoma occur, AIDS is present.

Diagnosis

The infection triggers an immune response in all infected persons, producing antibodies against HIV. These antibodies and specific viral components (antigens, genetic material) can usually already be detected by advanced tests two to four weeks after infection.

In individual cases, the production of antibodies takes somewhat longer. To rule out an HIV infection, an HIV test should therefore be taken no earlier than six weeks after the last risk exposure (in the case of rapid tests and self-tests, 12 weeks are recommended). If anti-HIV antibodies or components of HIV (antigens, genetic material) are detected, a confirmatory test using a different test method must be carried out. Only if this test is also reactive ("HIV test positive") is the person definitely infected with HIV.

There are many reasons to get tested: obtaining certainty when being worried about a potential infection, wanting to

have sex without a condom in a relationship, wanting to have children, starting therapy as early as possible, or clarifying symptoms. Pregnant persons are recommended to get tested for HIV so that they can be offered antiretroviral therapy, if necessary, and to prevent transmission to the baby by taking appropriate further measures.

People who are not sure whether they might have been infected should get counselling, for example from an AIDS Service Organisation (if preferred, including over the phone/in anonymous form), at www.aidshilfe-beratung.de or from an experienced specialist (contact details are available at dagnae.de/aerzte). Discussing the risk of other sexually transmitted infections in the counselling session is recommended as well.

Testing is offered (for free or for a small fee) by public health departments as well as many AIDS Service Organisations and prevention projects (local testing facilities can be found at kompass.hiv/en, categories: testpoint). The test is anonymous and the result is not recorded.

Another option is mail-in testing: In this case, some blood is collected from the fingertip at home and sent to a laboratory for evaluation. The result is communicated over the phone (further information at www.samhealth.de).

There is also the possibility of performing a self-test.

At medical practices, the test is usually performed while documenting the patient's name and the test result in the medical records.

HIV self-test

HIV self-tests are suitable for people who do not want to go to a testing facility or do not have a testing facility in their area.

HIV self-testing kits are available from pharmacies, AIDS Service Organisations, drugstores, or online. It is important that they bear a CE marking, are designed for use by laypersons and are approved in Europe.

To rule out an HIV infection, a self-test should be taken no earlier than 12 weeks after the last risk exposure.

In rare cases, the self-test may show a positive result even though an HIV infection is not present. For this reason, a "reactive" test result should always be confirmed using a different test method at a medical practice, public health department, AIDS Service Organisation, or checkpoint. Only if this test is also reactive ("HIV test positive") is the person definitely infected with HIV.

Treatment

Medications

Today, there are more than 25 different HIV medications that suppress HIV replication, and new substances are being developed and tested. The active ingredients block different phases of the HIV replication cycle. In antiretroviral therapy (ART, also known as highly active ART = HAART), several of these substances are combined to increase the effectiveness of the treatment and prevent resistance development (which is why it is also called combination therapy).

Since effective ART suppresses viral replication to very low levels, the progression of the disease is stopped, allowing the immune system to recover and preventing the occurrence of symptoms and the development of AIDS. Symptoms that are already present can regress.

Although ART cannot reverse the damage HIV already causes to the immune system in the first few days and weeks (→ p. 30), successful therapy offers a good chance of a normal life expectancy and good quality of life.

Since the medications cannot remove HIV from the body, they probably need to be taken for life.

It is important that the therapy works well right away: The faster the viral load in the blood falls below the detection limit (→ p. 25), the more likely will the specific combination

be permanently effective. Therefore, HIV patients should be treated at medical practices, or outpatient clinics specialising in HIV from the very beginning.

When selecting the combination of substances, various aspects are taken into account, such as:

- Are any HIV strains present that are insensitive (resistant) to one or more HIV medications? In Germany, this is currently the case with about ten percent of all newly diagnosed HIV infections. This can be determined by resistance testing.
- What treatment regimen can be best integrated into the daily routine? Some medications need to be taken with food, others on an empty stomach, most of them once a day, others twice a day, and some even only once every few weeks.
- How do side effects such as diarrhoea or dizziness affect the patient's professional, private, and sex life?
- Are there any other medical conditions? Some HIV medications are not "compatible" with other substances or need to be precisely adapted to them.

Side effects

When starting ART, side effects such as diarrhoea or nausea, fatigue, headache and muscle pain or skin rash occur frequently, but usually disappear again after a few weeks. In rare cases, there are problematic undesirable effects, such as severe allergic reactions, acute live inflammation, or hypersensi-

tivity reactions, necessitating a change in the substance combination. This is also important to ensure the high level of "compliance" that is required for the long-term effectiveness of the therapy.

Long-term side effects mainly affect kidney function, metabolism, the nerves in the arms and legs as well as liver function.

Start of therapy

Today, the guidelines recommend starting HIV therapy as soon as possible after the diagnosis. However, if severe AIDS-defining conditions are already present, these are often treated first and ART is started a little later. In any case, comprehensive medical consultation is recommended. Contact details of HIV specialists can be found at the local AIDS Service Organisations or at www.dagnae.de/aerzte.

Adherence

To ensure that the antiretroviral substances are permanently present in the blood in sufficient concentration and to prevent resistance development, the HIV medications must be taken regularly and as prescribed. Interactions with other substances (e.g. medications or drugs) also need to be taken into account: They may reduce or increase the concentration of the HIV medications or the other substances in the blood.

Living together positively – joining forces against discrimination

Many people with HIV are living their lives to the fullest and HIV cannot be transmitted with stable and effective HIV therapy (→ p. 25), enabling people with HIV to become parents without fear of transmitting HIV to their partners and children.

However, the knowledge of these changes has not yet been sufficiently established in society, and even though many people know that everyday interactions involve no HIV risk whatsoever, HIV often still gives rise to fear and insecurity. Even today, people with HIV frequently experience devaluation and discrimination – to the point of bullying. Such experiences or the fear thereof can severely affect health and quality of life – and stops others from getting tested.

Support for people with HIV who have experienced discrimination and want to stand up for themselves is offered by counsellors of the AIDS Service Organisations (→ p. 68), the contact point of the German AIDS Service Organisation for HIV-related discrimination (www.hiv-diskriminierung.de/kontaktstelle) as well as the Federal Anti-Discrimination Agency and the regional anti-discrimination bodies (including the complaints offices of the State Chambers of Physicians in the event of discrimination in the healthcare sector).

HEPATITIS A, B, AND C

Key facts at a glance

- In viral liver inflammation, a distinction is made between chronic and acute infections. Hepatitis A never becomes chronic, hepatitis B in about 5-10% of the cases in adults, and hepatitis C in about three-quarters of the cases.

- An acute hepatitis infection often goes unnoticed. If symptoms do occur, they typically include lack of appetite, aversion to fatty foods and alcohol, exhaustion, headache, nausea, vomiting, upper abdominal pain, and flu-like symptoms. Only in a few cases does icterus ("jaundice") develop, involving yellowing of the eyes and the skin as well as dark urine and pale stool.

- Chronic hepatitis can take a mild course – causing mild inflammation of the liver and symptoms such as fatigue, exhaustion, upper abdominal pain, or itching.

- In severe cases, the liver cells are gradually destroyed and replaced by connective tissue (fibrosis); the liver tissue hardens. In the further course of the disease, liver cirrhosis (= scarring and shrinking of the liver causing loss of liver function) and in a small number of those cases, liver cancer may also develop after many years. Other organs, muscles, and joints may be affected as well.

- Hepatitis A is mainly transmitted through contaminated food/water ("travel-related hepatitis"), hepatitis B and C through blood: hepatitis B mainly during sex and injecting drug use, hepatitis C mainly during injecting drug use, in rare cases also during sex.

- A person who has had hepatitis A or B cannot be reinfected. By contrast, reinfection with hepatitis C is also possible after recovery or successful treatment.

- The best protection from hepatitis A and B is vaccination. There is no vaccination against hepatitis C.

- Protection from hepatitis is also offered by disinfection or the use of sterile equipment and disposable material (e.g. at hospitals and medical practices, but also when tattooing and piercing), protective measures for unborn and newborn children as well as the testing of blood and blood products. Hygiene measures, safer use practices (→ p. 27), and the use of condoms or internal condoms (→ p. 22) also reduce the risk of infection.

- Today, direct-acting antivirals allow chronic hepatitis C to be cured in nearly all cases, usually within eight to twelve weeks. If chronic hepatitis B requires treatment, the therapy is often lengthy and – if interferons are used – involves many side effects.

- In people with HIV and hepatitis B or hepatitis C coinfection, there are special factors to be considered in the treatment, such as interactions between medications. The therapy should therefore be performed by experienced specialists.

What is hepatitis?

"Hepatitis" derives from the Greek word for liver ("hepar") and means "inflammation of the liver". It is often caused by viruses = submicroscopic infectious agents consisting of genetic information and proteins that need human host cells to replicate. A distinction is made between hepatitis A, B, C, D, and E viruses (HAV, HBV, HCV, HDV, and HEV) and various subforms.

The liver is our most important metabolic organ and plays a major role in controlling carbohydrate, lipid, and protein metabolism. In addition, it produces coagulation factors, enzymes, and some hormones and is involved in the activation and breakdown of hormones. The bile produced by the liver and transported to the intestines stimulates digestion and the absorption of fats from food. Last but not least, the liver breaks down toxins and medications and excretes them with bile.

Chronic viral liver inflammation causes damage to the liver and may lead to impairment or loss of liver function and to liver cancer.

Epidemiology

Hepatitis A

Germany: Between 2018 and 2020, a total of nearly 2,500 infections were reported. The actual number of infections is higher because the condition often goes unnoticed. A large number of infections are transmitted on trips abroad through contaminated drinking water or contaminated foods. Another route of transmission is sex between men.

Worldwide: about 1.5 million infections per year

Hepatitis B

Germany: Every year, thousands of people become infected; between 2018 and 2020, some 20,000 infections were reported. An estimated 0.4–0.8% of the population have a chronic infection; this percentage is higher in certain groups (e.g. people with HIV, men who have sex with men, drug users, or people from countries with high hepatitis B prevalence).

Worldwide: In 2019, about 300 million people had a chronic infection, which is equivalent to roughly 3.9% of the global population; this percentage is considerably higher in some groups and countries. According to estimates, 1.5 million people become infected with hepatitis B every year.

Hepatitis C

Germany: Every year, thousands of people become infected; between 2018 and 2020, some 16,000 infections were reported. An estimated 0.3% of the population has a chronic infection (this percentage is higher in people with HIV).

Worldwide: There are about 60 million people with a chronic infection worldwide, which is equivalent to roughly 1% of the global population; this percentage is considerably higher in some groups and countries. Every year, some 1.5 million people become infected with hepatitis C.

Transmission

Hepatitis A

The hepatitis A virus (HAV) is excreted in the feces (stool) of an infected person and ingested through the mouth, mostly from contaminated water (including ice), shellfish, vegetables, fruit, and other insufficiently cooked foods. Infection is also possible during sex, e.g. through contact between the mouth and the anus or when touching the mouth with the fingers after contact with the anus, a used dildo or condom, or a shared lubricant container. In recent years, clusters of hepatitis A cases among men who have sex with men have been observed especially in big cities. Transmission is also possible through close contact, such as in kindergartens, schools or at home, or when using drugs together.

Hepatitis B

The hepatitis B virus (HBV) is highly contagious and is mainly transmitted through blood. Smaller amounts of HBV, which can still be sufficient for an infection, are also contained in the saliva, breast milk, semen, lacrimal fluid as well as in the urine or vaginal secretion of infected persons. HBV is mainly transmitted during sex; the risk increases if blood enters the body (an amount invisible to the naked eye is already sufficient). Contact with infected blood is also possible when sharing equipment for drug use, tattooing and piercing, and when sharing or mixing up toothbrushes, shaving gear, nail scissors, or the like.

Hepatitis C

The hepatitis C virus is mainly transmitted through blood, much more easily than HIV. In Europe, most infections are attributed to sharing equipment for drug use. Transmission is also possible when tattooing and piercing and when sharing or mixing up razors (and probably also nail scissors and toothbrushes). In countries with high HCV prevalence, there is also a risk during medical procedures under poor hygiene conditions.

The risk of transmission to the baby during pregnancy or birth is less than 5% in Germany. For people who could become pregnant, protection from hepatitis C as well as diagnosis and treatment of a potential infection are particularly important, because highly effective hepatitis C medications must not be taken during pregnancy and are also not approved for use in young children.

Transmission during sex is possible but occurs very rarely even when having vaginal or anal intercourse without a condom or internal condom; the majority of documented cases in recent years affected men who have sex with men (MSM), especially MSM with HIV. There is a generally increased risk if blood plays a role, such as in sexual practices involving a high risk of injuries or when there is rectal bleeding. Intestinal secretion containing HCV can also be passed on from one receiving person to the next receiving person, e.g. with the penis or a dildo (even when using a condom) or with the hands (even when using gloves). Transmission is also possible through traces of blood containing HCV in shared lubricant containers.

Protective and other measures

Hepatitis A and B

The best protection from hepatitis A and B is vaccination. It is recommended for people at higher risk of infection due to sexual behaviour (e.g. frequently changing sexual partners), chronic liver conditions or chronic conditions affecting the liver, people who travel to regions with high hepatitis A prevalence, people who have contact with hepatitis A/B patients as well as drug users and prison inmates serving longer sentences.

Protection is also offered by disinfection or the use of sterile equipment or disposable material (e.g. at hospitals and medical practices, but also when tattooing and piercing), protective measures for unborn and newborn children as well as the testing of blood and blood products. Hygiene measures, safer use practices (→ p. 27) and the use of condoms or internal condoms (→ p. 22), gloves or dental dams also reduce the risk of infection, but transmission of HBV is also possible during kissing in the event of minor bleeding in the mouth and a high viral load.

Transmission of HBV to the baby can almost always be prevented, for example by antiretroviral therapy during the pregnancy or by passive immunisation of the newborn directly after birth and subsequent active immunisation.

After a risk exposure (e.g. needlestick injury of staff members at medical practices or hospitals), "passive" immunisation is still possible within 48 hours (ideally earlier) by administering

immunoglobulins (= antibodies of people who have already had hepatitis B).

According to the Infection Protection Act, hepatitis A patients must not work in community facilities, catering or food processing businesses until the condition has resolved.

There are no work restrictions for hepatitis B patients, but individual restrictions for exposure-prone surgical procedures.

Hepatitis C

There is no protective vaccination and no passive vaccination against hepatitis C.

Drug users can protect themselves from hepatitis C by only using their own sterile syringes, needles, and other equipment (spoon, filter, water). To be on the safe side, tubes (for snorting or inhaling) and pipes should not be shared either.

The risk of sexual transmission is reduced by using condoms or internal condoms during anal and vaginal intercourse and gloves during fisting (new condoms and new gloves for each person). Sex toys and other instruments that may come into contact with blood should be thoroughly cleaned and disinfected, and dildos should be used with a new condom for each person. Lubricant containers should not be shared, and each person should use their own lubricant.

There are no work restrictions for hepatitis C patients, but individual restrictions for exposure-prone surgical procedures.

Symptoms | Progression | Effects

Acute infection

Hepatitis A

Hepatitis A is almost always asymptomatic in children, but usually causes symptoms in adults. Typical symptoms include lack of appetite, intolerance to fatty foods and alcohol, exhaustion, headache, nausea, or feeling of pressure below the right costal arch. In about one in three cases, pronounced symptoms develop, such as dark urine, pale stool, and icterus ("jaundice": yellowing of the skin and the eyes), often also accompanied by itching. The symptoms usually subside after two to six weeks. A so-called fulminant course with life-threatening acute liver failure only occurs in rare cases where the liver has already been damaged, for example by chronic hepatitis B or C; this risk increases with age. The infection resolves completely and provides lifelong protection from reinfection.

Hepatitis B

Acute hepatitis B causes no symptoms in about one-third of the cases, only mild symptoms similar to those of flu or common cold in another one-third of the cases, and pronounced symptoms such as yellowing of the eyes and the skin, dark urine, and pale stool in the last one-third of the cases. The symptoms are similar to those of hepatitis A (lack of appetite, aversion to fatty foods and alcohol, exhaustion, headache, nausea, vomiting, and upper abdominal pain). In about 0.5 to

1% of the cases, acute hepatitis B takes a fulminant course and can lead to liver failure. This risk increases with age. In more than 90% of the cases in adults, the immune system is able to control the hepatitis B virus and prevent its replication, even though some viruses remain in the liver cells. The infection is considered to have resolved if viral components are no longer detectable in the blood and antibodies are detected instead. Once resolved, hepatitis B imparts lifelong immunity = protection from reinfection.

Hepatitis C

In about three-quarters of the cases, acute hepatitis C does not cause any prominent symptoms and therefore usually goes unnoticed. Only in one-quarter of the cases do mild symptoms similar to those of hepatitis B develop, such as icterus (yellowing of the eyes and the skin), dark urine, and pale stool. About three-quarters of all HCV infections become chronic, i.e. the virus continues to replicate longer than six months after infection. The other infections resolve within six months. Chronic hepatitis C may also resolve spontaneously at a later point. Hepatitis C that has resolved spontaneously or with medication does not provide protection from reinfection.

Chronic infection

Hepatitis B

Hepatitis B becomes chronic in up to 10% of the cases in adults and can progress in highly different ways. For example, there are many virus carriers without symptoms and without detectable viral replication; in these cases, infectivity is very low. In more than half of the cases, chronic hepatitis B takes a mild course, causing changes in liver enzymes and only microscopic signs of liver inflammation. The aggressive form involves progressive impairment of liver function by fibrosis (liver cells are replaced by connective tissue cells without being able to take over their function); if the condition persists for a long time, it often culminates in liver cirrhosis (= scarring and shrinking of the liver) and permanent damage to the liver. This may cause liver cell cancer to develop, which may also occur without cirrhosis in rare cases of hepatitis B.

Hepatitis C

HCV infections become chronic in about three-quarters of the cases. Most of these infections remain asymptomatic over several years or decades or only cause mild symptoms (fatigue, upper abdominal pain, exhaustion as well as recurring temporary elevation of liver enzymes). In some cases, the infection takes an aggressive course causing fibrosis (see above) and in some of these cases liver cirrhosis with progressive loss of liver function after several years or decades. Patients with HCV-related cirrhosis have an increased risk of developing liver cancer.

Diagnosis

A hepatitis A infection is usually diagnosed by detecting antibodies against HAV in the blood, an HBV infection by detecting specific viral components (antigens) and antibodies against these antigens, and an HCV infection by a combination of detecting antibodies against the virus (anti-HCV) and HCV components in the blood. The diagnosis of hepatitis C additionally includes genotyping. It is the basis for selecting the medications, because individual active ingredients are not or not equally effective against all genotypes.

People aged 35 years and over covered by statutory health insurance are entitled to one-time testing for hepatitis B and hepatitis C as part of the “Check-up 35” health screenings.

Treatment

With all forms of hepatitis, it is important to avoid alcohol and other substances that are harmful to the liver (including medications, unless they are indispensable).

Hepatitis A

There is no specific therapy for hepatitis A.

Hepatitis B

In acute hepatitis B, usually only the symptoms are treated.

Chronic hepatitis B can be treated with interferon. Interferons are specific signalling proteins that are produced by cells, for example in response to viral infections, have an antiviral effect and activate natural "killer cells" that can destroy virus-infected cells.

Interferon therapy (involving many side effects) is aimed at stopping viral replication. To this end, interferon is usually injected subcutaneously once a week over a period of one year.

There is also long-term therapy with so-called nucleoside or nucleotide analogues that interfere with the viral replication as "false building blocks" of the genetic material. The therapy is aimed at stopping fibrosis and is well tolerated.

Hepatitis C

Medications directly acting against HCV (direct-acting antivirals, DAAs) can cure the infection in more than 95% of the cases with relatively few side effects and usually within eight to twelve weeks. The best combination of active ingredients and the therapy period are determined based on the genotype, the extent of fibrosis, and any previous hepatitis C therapies. Patients who have no or only mild liver fibrosis are usually treated without the addition of ribavirin over a period of eight to twelve weeks. In the case of advanced fibrosis, cirrhosis, or pre-treated patients, the therapy may take 16 weeks, in rare cases even 24 weeks; in addition, a combination with ribavirin is more frequently required. The chance of recovery is slightly smaller and the complication rate is higher.

Successful treatment does not impart immunity, i.e. reinfection is possible.

SEXUALLY TRANSMITTED INFECTIONS

Chlamydia, genital warts/HPV, herpes, gonorrhoea, syphilis

Key facts at a glance

- Most people come into contact with sexually transmitted infections (STIs) at some point in their lives – either because they themselves or their sexual partners are affected. Common sexually transmitted infections include chlamydia infections, genital warts and herpes as well as gonorrhoea ("clap") and syphilis.

- Most sexually transmitted infections are easily treatable if diagnosed early on. If left untreated, some of them can have severe consequences.

- As the name "sexually transmitted infections" implies, the pathogens are mainly transmitted through and/or affect the genitals. This most frequently occurs during vaginal or anal intercourse without a condom or internal condom ("femidom") as well as during oral intercourse: through semen, the liquid film on the mucous membranes of the vagina, penis and rectum, and through blood.

- Other routes of transmission that play a role during sex include ingestion of the pathogens through the digestive tract (e.g. through direct contact between the mouth and the anus or by the anus-finger-mouth route) as well as through contact with ulcers or inflamed, contagious skin lesions (e.g. herpes blisters, genital warts, or syphilis ulcers).

- Some sexually transmitted infections can also be transmitted during injecting drug use as well as to children during pregnancy, at birth, or thereafter.

- Many sexually transmitted infections cause inflammation, ulcers, or small lesions on mucous membranes that can be involved during sex, increasing the risk of HIV transmission and infection when having sex without a condom or internal condom with persons with HIV who are not receiving ART.

- Condoms and internal condoms provide protection from sexual transmission of HIV and reduce the risk of other sexually transmitted infections.

- Avoiding contact with visibly changed or inflamed skin areas or wounds as well as preventing blood and other body fluids, excretions, or pus from entering the body further reduces the risk.

- A vaccination provides the best protection from hepatitis A and B as well as the most common pathogenic HPV strains.

- Some sexually transmitted infections can be transmitted despite taking precautions, such as using condoms.

- Since symptoms are often not present or go unnoticed, people who have sex with different partners should get tested once a year, even if no symptoms are present, and seek medical treatment if necessary.

- When diagnosed with a sexually transmitted infection, the sexual partners should also be informed so that they can also be tested and seek medical treatment. This also helps prevent reinfections.

What are sexually transmitted infections?

The pathogens causing sexually transmitted infections are mainly transmitted through and/or affect the penis and the vagina as well as the rectum. They are most commonly passed on through body fluids that play a role during sex, such as semen, the liquid film on the mucous membranes of the vagina, penis and rectum, and through blood. The main routes of transmission are vaginal and anal intercourse without a condom or internal condom as well as oral intercourse.

Most sexually transmitted infections are easily treatable if diagnosed early on. If left untreated, some of them can have severe consequences, such as infertility, loss of eyesight (as a result of untreated gonorrhoea of the eyes), or damage to blood vessels, bones, nerves, or the brain (in advanced syphilis).

Epidemiology

The prevalence of sexually transmitted infections varies between population groups, countries, and regions. For example, syphilis in Germany currently affects predominantly men who have sex with men (MSM), whereas in Eastern Europe it is more prevalent in the heterosexual population. This is attributable, among other factors, to differences in access to prevention, diagnosis and treatment, the number of sexual partners, the preferred sexual practices, or social conditions such as stigmatisation of lifestyles or marginalisation of infected people.

In Germany, groups that are particularly affected by and at risk of sexually transmitted infections include:

Gay men and other MSM

More than half of all HIV infections and the majority of syphilis infections affect gay men and other men who have sex with men (MSM). Chlamydia and gonorrhoea (including in the throat and rectum) are also common.

Heterosexual men and women

Heterosexuals, especially those who have sex with different partners, are mainly affected by chlamydia infections, trichomoniasis, and candidiasis as well as gonorrhoea. In the event of sexual contact with people from countries with high syphilis prevalence (e.g. Eastern Europe), syphilis occurs as well.

Adolescents

Adolescents and young adults are more frequently affected by chlamydia infections, which can lead to infertility, in particular in girls and women.

Sex workers

Non-professional sex workers (especially those from countries with high prevalence of sexually transmitted infections) are more commonly affected by gonorrhoea, chlamydia infections, and syphilis than other women.

Drug users and prison inmates

Drug users and prison inmates, many of whom were or still are injecting drug users, are disproportionately affected by hepatitis, especially by hepatitis B and C.

Transmission

Direct sexual transmission of sexually transmitted infections such as hepatitis B and HIV is possible by exchanging body fluids, for example when semen enters the rectum or vagina.

Chlamydia as well as the pathogens causing gonorrhoea and syphilis are transmitted through close contact between mucous membranes. Syphilis can also be transmitted through moist skin areas. Herpes viruses can be transmitted through contact with herpes blisters and HPV also through skin scales.

Some pathogens can be transmitted via objects such as dildos, used condoms, or shared lubricant containers, or through body parts (finger, penis) to which bodily secretions or blood are attached, e.g. by the anus-finger-mouth route; this applies to the hepatitis A virus, for example. Transmission from one receiving person to another receiving person is also possible this way.

Other pathogens are ingested and excreted through the digestive tract, e.g. the hepatitis A virus, the pathogens causing amoebiasis, and shigella.

For an infection to occur, the pathogens usually have to overcome the uppermost layer of the skin or mucosa. This happens more easily at sites where the skin or mucosa is thin (e.g. the mouth of the cervix or the rectum), and is facilitated by inflammation or small lesions.

The risk of transmission also depends on the pathogen itself: Gonorrhoea and syphilis, for example, are highly contagious, whereas the average risk of HIV infection during a single sexual contact with an untreated HIV-positive partner without a condom or internal condom or without PrEP is less than 1%. Hepatitis B virus is also much more contagious than HIV.

However, unfavourable factors, which are often not noticed and cannot be influenced (e.g. strong replication of the pathogen shortly after infection), can easily turn a statistically low risk into a high risk in individual cases. Moreover, small risks "accumulate" over the course of time.

Protection

Condoms and internal condoms (“femidoms”) provide protection from sexual transmission of HIV and reduce the risk of other sexually transmitted infections.

Avoiding contact with visibly changed or inflamed skin areas or wounds as well as preventing blood and other body fluids, excretions, or pus further reduces the risk.

Vaccination provides the best protection from hepatitis A and B as well as the most common pathogenic HPV strains.

Some sexually transmitted infections can be transmitted despite taking precautions, such as using condoms. Since symptoms are often not present or go unnoticed, people who have sex with different partners should get tested once a year, sex workers preferably four times a year, even if no symptoms are present, and seek medical treatment if necessary.

When diagnosed with a sexually transmitted infection, the sexual partners should also be informed so that they can also be tested and seek medical treatment. This also helps prevent reinfections.

Symptoms | Progression | Effects

Sexually transmitted infections can remain asymptomatic, cause mild symptoms, or involve a wide range of different symptoms. Typical symptoms indicative of a sexually transmitted infection include:

- Urethral discharge
- Rectal discharge (mainly in the form of mucus coating on the stool)
- Burning or pain when urinating, itching
- Ulcers, blisters, nodules, or warts on the genitals, around or inside the mouth, in the anal region, or in other body regions
- Redness or whitish or yellowish coating in the mouth, on the genitals, or in the anal region
- Pain and swelling of the genitals
- Swollen lymph nodes in the groin area or in the area surrounding ulcers
- Unusual skin changes, e.g. weeping sores, rash, redness.

Sexually transmitted infections that mainly affect the gastrointestinal tract may additionally cause symptoms such as blood or mucus in the stool, discoloration or decoloration of the urine or stool, recurring diarrhoea, possibly alternating with constipation, persistent feeling of pressure in the abdomen, abdominal pain, and lack of appetite.

Non-specific symptoms, such as persistent exhaustion, fever of unknown origin, or general malaise are possible as well.

Diagnosis

It is important to watch out for possible symptoms of an STI and discuss noticeable changes with a medical specialist. However, since sexually transmitted infections do not always cause symptoms and symptoms are sometimes not noticed or are mistaken for symptoms of other diseases, people who have sex with different partners should get tested once a year and seek medical treatment if necessary. Informing, testing, and treating sexual partners is also important.

In most cases, it is advisable to consult specialists for testing and treatment. In addition, most public health departments offer anonymous and free counselling on sexually transmitted infections. In bigger cities, people can usually get tested for free and, in special cases, receive treatment as well.

In view of the great number and variety of possible symptoms, "self-diagnosis" or "diagnosis" by friends or acquaintances is strongly advised against – if an infection remains undetected or is "treated" incorrectly, it can be protracted and lead to later complications.

In people with HIV, there are special factors to be considered in the diagnosis – it should be reserved for specialists with particular experience in this field. In the event of a poor immune status, for example, a syphilis test may show a negative result despite the presence of distinct symptoms (false negative result), or hepatitis B may become active again after having resolved.

Treatment

Most sexually transmitted infections are easily treatable with medication. Self-treatment (e.g. with medications that are left over from a previous illness or medications of friends or acquaintances) is not advisable – it can lead to protraction of the infection, resistance development of the pathogens, further spread of the infection, and later complications.

The treatment of sexually transmitted infections in people with HIV should be performed by specialists with particular experience in this field because interactions of antibiotics and other substances with antiretroviral therapy are possible.

Unfortunately, you cannot build immunity against sexually transmitted infections (except in the case of hepatitis A and B). That means you can contract them over and over again.

FURTHER INFORMATION, CONTACT DETAILS, COUNSELLING

Deutsche Aidshilfe (DAH)

www.aidshilfe.de

Information on HIV/AIDS (protection, testing, treatment, living with HIV, PEP, PrEP), hepatitis, and sexually transmitted infections, links to counselling services and an overview of DAH's free information materials available for ordering and downloading.

You can find contact details of AIDS Service Organisations, testing facilities, and self-help centres at kompass.hiv/en; you can filter the results by location, categories and target groups.

www.aidshilfe-beratung.de

Portal to the counselling services of the AIDS Service Organisations on HIV/AIDS, hepatitis, and sexually transmitted infections – anonymously (online in a private chat, by email, over the phone) or in person. Counselling is provided by specially trained staff members of the AIDS Service Organisations who continuously undergo further training and exchange experiences with each other.

The **telephone counselling** of the AIDS Service Organisations is available on the nationwide uniform phone number 0180 33 19411 (Mondays to Fridays from 9 am to 9 pm, Saturdays and Sundays from 12 noon to 2 pm; 9 cents per minute from all German networks).

DAH on social media

deutscheaidshilfe

Aidshilfe_de

Deutsche Aidshilfe

www.magazin.hiv

News, background information, debate contributions, personal stories, and authentic images related to HIV, hepatitis, and sexually transmitted infections

Bundeszentrale für gesundheitliche Aufklärung (BZgA)

www.liebesleben.de

Information and counselling on sexual health (HIV/AIDS and other sexually transmitted infections), methods and materials for prevention work, counselling centres database

www.liebesleben.de/fuer-alle/lass-dich-beraten

Counselling services of the BZgA on HIV and sexually transmitted infections

The **telephone counselling centre** of the BZgA is available on 0221 / 89 20 31 (Mondays to Thursdays from 10 am to 10 pm, Fridays to Sundays from 10 am to 6 pm); price according to the telephone company's price list for calls to the German landline network).

Robert Koch-Institut

www.rki.de

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