

# LOVE WITHOUT FEAR OF AIDS



**WHAT YOUNG PEOPLE  
SHOULD KNOW  
ABOUT AIDS**

AIDS  
INFORMATION SWITZERLAND 



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## PREFACE TO THE 4TH EDITION

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Since its discovery AIDS has become one of the greatest threats to mankind. This epidemically spreading infectious disease, for which no vaccine and no cure have yet been found, confronts the medical world with immense challenges. Fortunately, the ways in which an infection can occur were quickly researched and the medical world can now supply ample information on how an infection can be avoided. An individual can protect him- or herself through behaviour: all people who protect themselves are contributing to stemming the epidemic – and, in the process, are sparing themselves and their loved ones the great sorrow caused by disease and an early death.

I am glad that this present 5<sup>th</sup> edition of the *Love without Fear of AIDS* booklet has been extended to include an extensive account of the medical information for sensible prevention. The advice follows from this information. This is in line with the principle which I can confirm through many years of experience, that knowledge is essential to prevention. Only suf-

ficient knowledge can enable an individual to adapt his or her behaviour in a suitable manner. This principle applies incidentally to people of all ages – not least also to young people.

This booklet is primarily addressed to young people and offers them advice on how to protect themselves from an infection. The zeitgeist of today does not help young people to find their way through a fog of misinformation. Often the model presented to them is that of hedonistic self gratification. It would seem at times as if young people no longer strive for beauty, truth, and virtue. In reality this is, of course, not the case: the large majority of young people see a family life based on faithful love to one partner as one of the most valuable aims in life. It is not only for this reason that a young person should be encouraged to take care of his own life as well as that of the people around him; there is also the ethical imperative which is particularly emphasised through the possibilities of AIDS prevention

introduced in this brochure. Every helping hand – such as the one offered by this booklet – which will assist young people to adapt their lives to these ideals should be welcomed.

We should thank the author and AIDS Information Switzerland for the booklet *Love without Fear of AIDS* and wish them a wide readership. It should be recommended to doc-

tors, teachers, social workers, and all others who accompany young people on their way to adulthood – especially, however, to parents and the young people themselves.

*Werner E. Schreiner  
Professor and former director  
of the gynaecological clinic  
at the University of Zurich*

## INTRODUCTION

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Since the arrival of AIDS, love can be not only wonderful but also very dangerous. AIDS is a fatal disease. A single sexual contact with an HIV-infected person is enough to cause infection. And yet it is nowadays possible to be virtually sure of avoiding infection with HIV. The question is: how?

What do young people, above all, need to know to protect themselves from the HI virus as effectively as possible? In order to find answers to this question, several doctors came together, exchanged practical experiences and reviewed the latest research results on AIDS.

This booklet is the result of their work. It describes the current status of research in simple words; the reader does not require any previous medical knowledge. It offers urgently needed information on all matters which young people living in the age of HIV infection must know about.

Scientifically corroborated, it informs about HIV infection in a factual and down-to-earth manner, and without wagging a finger, since, after

all, AIDS pays no heed to gender, age or (im)morality.

We are faced with the fact that HIV victims are getting younger all the time. Therefore, young people in particular should know how the virus spreads, what possibilities there are of protecting oneself from infection – and how safe these possibilities are. People who know the scientific facts can protect themselves effectively – according to their own individual situation.

Everyone who has insight into the disease and its routes of transmission will adapt his life accordingly. Just as no-one would put his hand into a fire, as everyone knows the inevitable result, the insight into the problems of AIDS also “forces” consequences; such as behaviour which excludes the risk of infection. The present booklet is geared to this aim of prevention – because every single infection with the AIDS virus is one too many!

In the early eighties it was still believed that AIDS would remain restricted to the so-called high-risk groups (homosexuals and drug ad-

dicts). Today we know that even at that time the epidemic had started spreading slowly among the heterosexual population (that is, through sexual intercourse between a man and a woman). The number of transmissions between young heterosexual men and women is also increas-

ing in Switzerland from year to year. For this reason, this information booklet is primarily addressed to young people.

*Giovanni Fantacci, M. D.  
President AIDS  
Information Switzerland  
Zurich, 2003*

# THE HIV EPIDEMIC

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## General Information

AIDS is the acronym for Acquired Immune Deficiency Syndrome. To be precise, the fatal disease AIDS is actually the final stage of an infectious disease caused by HIV (human immunodeficiency virus).

HIV belongs to a special group of viruses which only break out into

the actual disease after a very long time. This group of viruses is called lentiviruses from the Latin “lentus” = slow. A peculiarity of the lentivirus HIV is that the viruses only make their victims ill very slowly, imperceptibly or protractedly. It takes on average ten years from the infection with HIV to the outbreak of the disease AIDS.



Icebergs are such a danger for ships because  $\frac{6}{7}$ <sup>ths</sup> of the iceberg lie under the water's surface, in other words, are invisible. We are faced with a similar phenomenon with the HIV epidemic. There are at least ten times more HIV-infected people than AIDS sufferers. Most people infected with HIV are unaware of their infection for years. Furthermore, one cannot tell an infected person simply by looking at them. The treacherous point is that an infected person can infect a partner with the virus at any time after his or her own infection.



Treatment with the antiviral drugs now available extends this period. On average, people begin suffering from influenza one to three days after becoming infected. The medical term for the interval between the infection and the outbreak of a disease is the latency or incubation period. The long latency

period for AIDS means that the presently known cases of AIDS represent only a fraction of all the HIV-infected people. The AIDS cases are, therefore, not representative for judging how widespread HIV is today, rather they merely reflect the extent of the infection a good decade ago.

## THE SPREAD OF THE HIV INFECTION

### History of the HIV Epidemic

HIV is thought to have originated in Central Africa. It has been calculated that a period of 100 years or so was necessary to trigger the epidemic. The disease initially spread within Africa itself, transmitted through tribal rituals (such as blood rituals), prostitution and mass migrations due to war and displacement. At first, the spread of the HIV infection was very slow, but the process was then accelerated by changes in the social context and the break-up of cultural traditions.

In the wake of tourism, HIV found its way to Haiti, from there to the United States and then to Europe. Somewhat later it spread from Africa to other regions of the world, such as India.

It was not until 1981 that in the USA AIDS was discovered as a disease among homosexual men. Consequently, it was first presumed that only homosexuals were affected by this sexually transmitted disease. However, it soon became evident that the HIV infection had already at that

time begun spreading imperceptibly among the heterosexual population in North and Central America. It should be noted that many homosexuals also had sexual contact with partners of the other sex at the same time. Drug addicts who inject drugs into their veins, have also greatly contributed to the spread of HIV infection. It was only in Africa that women and men were equally affected by the disease from the very beginning.

Worldwide, over 80% of all HIV infections to date have been passed on through heterosexual contact, and about 10% from mother to child.

### The HIV Epidemic Worldwide

From a global perspective, despite a degree of progress in some countries, there is currently no prospect of halting the epidemic of HIV/AIDS.

According to the Joint United Nations Programme on HIV/AIDS, UNAIDS, in the year 2002 alone, 5 million people – 13699 per day – were newly infected with HIV. In the same year 3.1 million died of Aids. By

the end of 2002 the number of deaths since the outbreak of the epidemic totalled more than 21.8 million and the number of infected persons had risen to over 60 million. A total of 14 million children are estimated to have been orphaned through AIDS, showing that the HIV epidemic affects not only the infected persons themselves but also their partners, children, and indeed whole families and kinship groups.

Throughout the world, more and more epicentres are emerging: sometimes whole regions, where there had previously been very few cases of HIV, as in China, Russia or the Ukraine, but also in sections of a population, where, if anything, HIV had been, or still is, on the decline in the country as a whole.

In his report published in June 2000, Peter Piot, Director of UNAIDS, admits that in the early nineties, the

<b>HIV-EPIDEMIC IN NUMBERS</b>		
People newly infected with HIV in 2002	Total	5.0 million
	Adults	4.2 million
	Women	2.0 million
	Children <15 years	800 000
Number of people living with HIV/AIDS in 2002	Total	42.0 million
	Adults	38.6 million
	Women	19.2 million
	Children <15 years	3.2 million
AIDS deaths in 2002	Total	3.1 million
	Adults	2.5 million
	Women	1.2 million
	Children <15 years	610 000
AIDS deaths since the beginning of the epidemic until the end of 2001	Total	21.8 million
	Adults	17.5 million
	Women	9.0 million
	Children <15 years	4.3 million
AIDS orphan since the beginning of the epidemic until the end of 2001		14.0 million

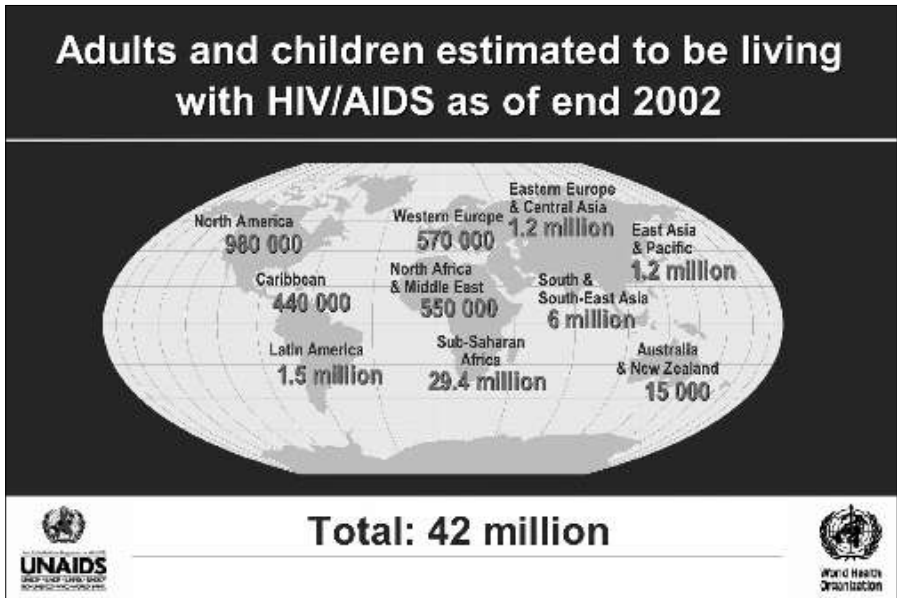
Estimates of the worldwide HIV epidemic, end of year 2002. Source: UNAIDS (Joint United Nations Programme on HIV/AIDS)

AIDS epidemic was regarded as a health crisis and that the number then estimated to be infected was only one third of the true total. Today the AIDS epidemic is plunging numerous countries into overwhelming crises, profoundly disrupting every sphere of life in the society.

**Africa**

Over 70% (28.5 million) of those currently infected with HIV live in Africa, and the annual number of persons newly infected reached 3.5 million in the year 2002 and continues to soar.

In 16 countries south of the Sahara, 10% or more of the 15-to-49 age group have become infected with HIV. The highest incidence is in Botswana, where already one adult in three carries the virus. UNAIDS warns that two-thirds of all boys now aged 15 in that country will die prematurely of AIDS. In South Africa, where a fifth, and in Zimbabwe, where a quarter of all adults have become infected, AIDS will kill half of these 15-year-olds. In Zambia, 1300 teachers died in the first ten months of 1998, a number equivalent to two-thirds of all newly-



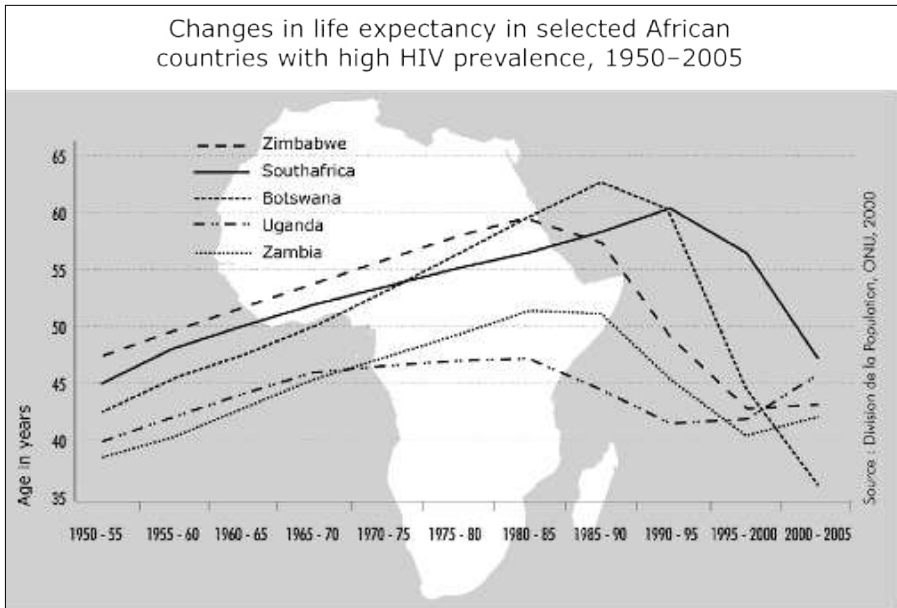
UNAIDS estimates that, at the end of the year 2002, 42 million adults and children were living with HIV/AIDS.

qualified teachers. Alone among African countries, Uganda managed, through wide-ranging prevention campaigns, to reduce the prevalence of HIV from 14% in the early nineties, to 8% in 1998.

**North America and Western Europe**

In North America and in Western Europe, Switzerland included, both the annual number of newly diag-

nosed AIDS cases and the number of deaths have been on the decline since 1995 or thereabouts. This trend results mainly from the widespread use of antiretroviral therapy for HIV-infected persons. The number of recorded positive HIV tests has also been falling in these countries for several years, and over 50% of these are attributable to heterosexual contact. But for lack of systematic studies, it



Change in life expectancy due to the AIDS epidemic in African countries. These curves demonstrate starkly the fall in life expectancy in these countries over the last 15 years.

is impossible to tell whether the annual rate of new infections is really falling. In every country the number of hidden cases is very large.

In Switzerland, about half of the heterosexual men who are infected remain unaware of the fact until they are diagnosed with AIDS; in other words some ten years elapse, during which they know nothing of their infection and so are unknowingly passing on the virus to their partners. Among women the situation is only slightly better: half of those infected test HIV-positive at least one or two years before AIDS is diagnosed; these spend 8 years not knowing that they are carrying the virus.

In certain sections of the population there has been an alarming rise in the number of new infections. A study in the United States (1994–1998) revealed a rapid rise among young homosexuals: no 15-year-olds were HIV-positive, but as many as 9.7% of 22 year olds had become infected, and of these barely one fifth (18%) knew that they had. In Switzerland, among those testing positive for HIV, the proportion originating from Sub-Saharan Africa rose from 5% in 1990 to 21% in 1998.

These results are a stark warning that even in these latitudes, we are not yet in any position to sound the “all-clear” as regards HIV.

# INFECTION HAZARDS AND PREVENTION

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## HOW IS HIV PASSED ON?

HIV is only passed on directly from one infected person to another, unlike the flu virus or tuberculosis bacillus, which can spread through the air: when someone coughs, for example (droplet infection). An HIV infection can only occur when a body fluid containing the virus comes into contact with a mucous membrane or directly enters the bloodstream.

### Where the Virus is Found

Human Immunodeficiency Virus is found in the blood and other body fluids of humans. It may be free or it may be hidden within white blood corpuscles. In either case it can pass from one person to another, the likelihood of transmission depending on the concentration of the virus in the body fluid concerned.

The blood of an infected person contains very large amounts of the virus; semen, vaginal fluid and breast milk contain somewhat less. Very small amounts of the virus have also been found in other body fluids, such as saliva, tears and urine.

The virus can be passed on only if body fluid containing a large amount of it enters another person's body, chiefly via blood, semen, vaginal fluid and breast milk. In the other body fluids (saliva, tears and urine) concentrations of the virus seem to be too low for transmission to occur unless they contain blood as well (in saliva, for example, when gums are bleeding).

### Entry Points

That the virus can enter the body through injured, bleeding skin, through uninjured mucous membrane, or direct into the bloodstream via an injection or blood transfusion is fairly obvious.

Transmission through intact skin is impossible. However, the virus can also enter the body through healthy mucous membrane. How is this possible? HIV cannot penetrate intact healthy skin because of its protective cornified layer. Viruses can only enter the human body if the skin is damaged or inflamed.

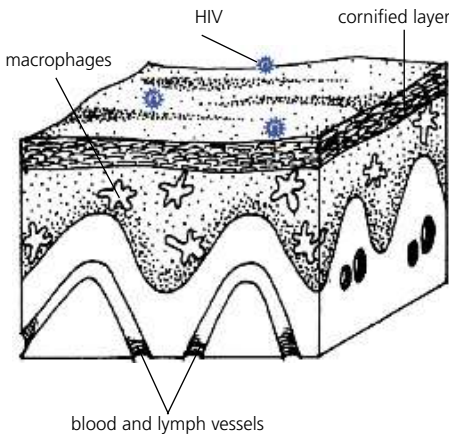
However, mucous membrane, such as that which covers the vagina,

glans, mouth, nose, eyes, and anus, for example, do not have a protective cornified layer. Viruses can therefore use mucous membrane as a point of entry.

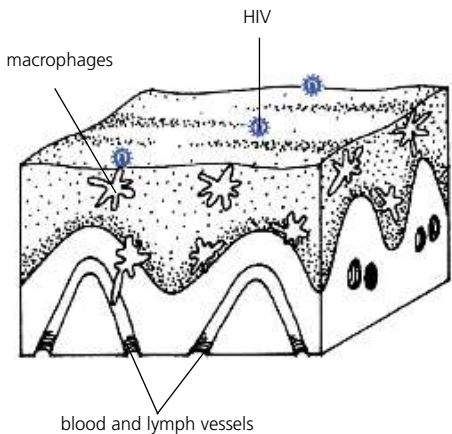
In so doing the virus employs a cunning trick. The scavenger cells, or macrophages, are among the very cells that it seeks out as its host cell. Macrophages reside in mucous membrane and inflamed skin to keep watch over the unprotected surface. They act as a kind of early warning system for the

body: they become active as soon as a virus or another agent comes into contact with the surface of the mucous membrane. They draw the tiny virus close with their mobile appendages and absorb it in order to “digest” and consequently, destroy it.

This works with other viruses, but not with the HIV. On the contrary: The virus is able to hide inside the macrophage, commandeering it both as a host cell and as a means of transport.



Skin: The virus is prevented from penetrating healthy, intact skin by its cornified layer.



Mucous membrane: There is no cornified layer which would be impermeable for HIV. HIV can be absorbed by macrophages directly even through healthy mucous membrane.

## HOW THE VIRUS IS TRANSMITTED

The HIV infection is primarily a sexually transmitted disease. Consequently, it is practically impossible to become infected in everyday life. The following situations contain a risk of infection.

### Sexual Contact

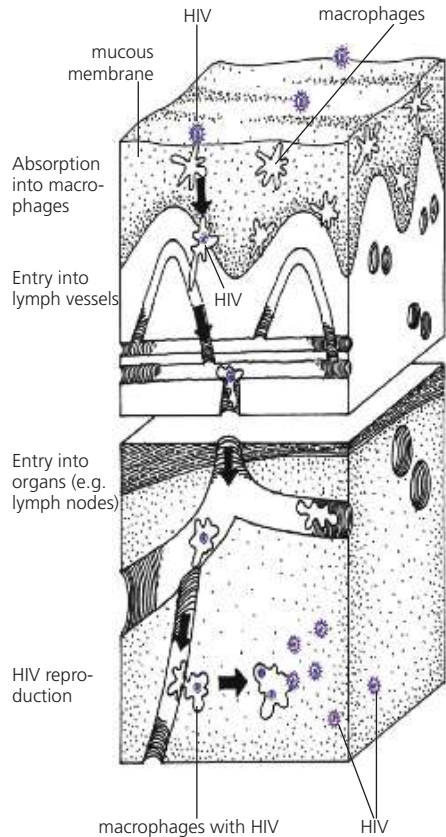
HIV can be transmitted by having sex with an infected person. Oral sex is also dangerous, and the risk of infection from deep (open-mouth) kissing cannot be entirely ruled out (cf. p. 23).

### From Mother to Child

An HIV-infected mother can pass on the virus to her child during pregnancy (via the placenta), while in labour or giving birth, and by breastfeeding.

### Nursing and Treatment of HIV-Infected Persons

Healthcare workers are at risk of HIV infection when nursing or treating infected persons, particularly if they prick or cut themselves during operations with infected needles or instruments, and to a lesser extent if infected body fluid comes into contact with mucous membrane (e.g. blood squirted into the eye) or with unprotected injured skin (cf. p. 37).



HIV is taken in by the macrophages in healthy mucous membrane. It is appropriate that macrophages are known as Trojan Horses: they cannot destroy HIV as they do other viruses and bacteria. Once in the (mucous) membrane, the macrophages travel with the HIV through lymph vessels into the lymph nodes, the centres of the immune system. It is indeed the lymph nodes that form the reservoir in which the virus reproduces. From there, HIV can enter the blood or be distributed throughout the whole body by macrophages.

### **Drug Abuse**

Injecting drug users who share needles can infect one another, as residues of blood remain in the syringe.

### **Blood Transfusions, Organ Transplants**

There is a risk of infection if a blood or organ donor is HIV-positive. As a result, in the industrialised countries (in Switzerland since autumn 1985) all blood and organ donors are tested for HIV. Furthermore, blood donors are requested not to donate blood if they have been exposed to a risk of infection with HIV. Nevertheless, the remaining risk of an infection being overlooked is extremely low (about 1:600000). This is due to the diagnostic window of the AIDS test (cf. pages 25, 56) in the first few weeks after an infection has occurred.

### **IMPORTANT!**

The motor of the AIDS epidemic is the frequent, casual changing of partners. Alcohol and drugs act as fuel for this motor. They cloud one's feeling for reality, blur one's sense of responsibility and therewith lead to rash, imprudent sexual contacts which one might later regret. A life without drugs and with moderate alcohol consumption is, therefore, an important protection from HIV.



## No DANGERS OF INFECTION

### Sexual Contact

There is no danger of infection in a faithful relationship – provided that both partners are HIV-negative and neither of the partners is exposed to a non-sexual, e.g. professional, risk of infection.

### Ordinary Social Contact

As it takes a direct contact with the body fluids of a person infected with HIV for a transmission of HIV to occur, there is generally no danger of infection in everyday life. Added to this, HIV is highly sensitive and outside the body will soon perish under environmental influences such as sunshine, the cold, air, etc. There is, therefore, no need to fear an infection in the following situations:

- on public transport, in schools, toilets, etc.
- from skin contact such as shaking hands, caressing or kisses on the cheek
- when doing sport, e.g. swimming, ball games
- in restaurants
- in the family and in everyday life together
- contact with animals

A precondition is naturally that generally accepted rules of hygiene are observed and that there is no contact between body fluids infected with HIV and open wounds or mucous membrane.

## THE RISK OF TRANSMISSION

In the case of many infectious diseases the risk of infection from the various modes of transmission cannot always be stated precisely. There are also always cases in which it is not known how exactly an infection actually occurred.

Research into the modes of transmission and the risks of infection with HIV is especially difficult as it takes a few weeks up to several months before an infection can be traced and years until AIDS breaks out. It is, therefore, often impossible to establish precisely when and how an infection took place. It is a great achievement of modern medicine that the principal modes of transmission were already recognised 1–2 years after the discovery of the first AIDS patient (cf. chapter “How the Virus is Transmitted”, p. 16).

Not everyone exposed to the same risk of transmission will actually become infected. This is not only true of HIV, but of numerous other more familiar infectious diseases. Not all members of a family will fall ill with gastroenteritis even if all have eaten the same food.

In order to develop a better understanding and judgement of this question, several examples will be discussed in this chapter.

### Risk of Infection through Sexual Intercourse

It has been proved that one can get infected through sexual intercourse with a person who is HIV-positive. Worldwide, by far, most people are infected during sexual intercourse (over 80% of all HIV infections). Nevertheless, we still do not know exactly how great the risk is from a single sexual contact with a person infected with HIV. Various tests have given astonishingly differing results: the given risk of infection per sexual contact ranges from 1:2 to 1:500. There are people who are proved to have become infected during the first sexual contact. There are, however, also couples where one partner is infected and the other not, who have regularly had sexual intercourse together and still no HIV transmission has occurred, even after several years.

A variety of factors play a role in the infectivity of a virus. It is hard to

estimate the risk in isolated cases. However, when considering the risks run by individuals, we must bear in mind that even a single sexual contact can suffice for an infection. A comparison with Russian roulette is not far-fetched – the despairing question of a person infected with HIV, “Why did it have to be me?”, makes this clear. The surest protection is always to avoid sexual contact with a person infected with HIV.

### **Factors of Infectivity**

Infectivity means how acutely or how mildly an HIV infection occurs. For one thing, it depends on the amount of body fluid a person has come into contact with. The concentration, i.e. the number of viruses, in the body fluids concerned plays an equally important role. In vaginal fluid and semen the free virus is rarely present, whereas inflammation cells infected with the virus are numerous, and when HIV is transmitted sexually, these cells are the predominant source of infection. In someone also suffering from a sexually transmitted disease, the number of infected

inflammation cells rises dramatically. The risk of passing on HIV is reckoned to be three to five times greater when another sexually transmitted disease is present.

The concentration fluctuates greatly throughout the various stages of HIV. In principle, it is very high right at the beginning, during the acute infection, but then decreases rapidly until it gradually rises again (stages A and B), so that during the illness AIDS it is again very high (stage C). The concentration can also fluctuate a lot during stages A and B. Antiretroviral therapy reduces the concentration of the virus in body fluids.

The different subtypes of HIV and its innumerable variants (cf. p. 46f.) vary in their infectivity. There are regions where highly infectious virus types prevail (subtype E in Central Africa and South-East Asia). This is an important reason why HIV has spread so rapidly in Thailand.

However, the infectivity of HIV can also change within one and the same person, since new HIV variants are continually being created during reproduction.



There are equally varying factors in the recipient of the virus which affect infectivity. The chances of an infection are very high if a virus-carrying body fluid enters directly into the bloodstream. Inflamed or damaged mucous membrane is also more susceptible to viruses than healthy membrane. For example, the danger of a person with another venereal disease becoming infected is higher because the genitals are more likely to have inflammations or ulcers.

The risk of infection is 100% from a blood transfusion with HIV-infected blood (high concentration enters directly into the bloodstream). The risk

is nil in body contact with healthy, undamaged skin, e.g. during a massage where healthy undamaged skin, which HIV cannot penetrate, does not come into contact with a body fluid. There are many variants in between these two “extreme cases”: common, rarer, clear and unclear, probable and less probable modes of transmission.

#### **Transmission Through the Mucous Membrane of the Mouth**

**Mother’s Milk** A mother infected with HIV can infect her child through her milk during breastfeeding. There are cases where no infection could be proven to have occurred between a mother and her child during preg-

nancy and birth, but that HIV was transmitted to the infant through breastfeeding.

**Oral Sex** It is established that an infection can occur during oral sex. There are cases where a single act of oral sex with a person infected with HIV was enough for a transmission of HIV to occur. Lesbian women are said to have become infected in this manner, too. However, even less is known about this risk of infection than about that from sexual intercourse.

**Kissing** A risk of HIV infection from deep (open mouth) kissing cannot entirely be ruled out. Individual case studies have been described where alone French kissing was apparently sufficient for an infection to occur. More precise information about the risk of infection from French kissing does not exist. Research into this mode of transmission is difficult, not least because most infected people who did French kissing also went on to have other forms of sexual contact.

On the basis of indirect evidence, experts assume that French kissing can lead to an infection: HIV can be transmitted through the mucous membrane of the mouth (breastfeeding, oral sex), and there are often blood traces (a lot of HIV) in saliva

(little HIV) during French kissing, e.g. due to bleeding gums. There is no risk of infection from kisses on the cheek.

### Unsolved or Rare Cases

There are a number of unsolved cases of infection with HIV. In 1993 scientific journals reported two transmissions of HIV within families. In the first case, it was a child whose sibling was infected with HIV, and in the second case, it was a youth whose brother was also infected with HIV. In both cases the common routes of transmission (mother – child, blood transfusions, sexuality, etc.) could be ruled out. An extensive genetic examination of the viruses of the siblings showed practically identical strains of HIV. It must, therefore, be presumed that the transmission occurred between the respective siblings. The most probable routes of transmission were researched. In the first case, it is assumed that the child got infected by sharing the same toothbrush; the transmission between the two youths most likely occurred through using the same razor.

On the whole, a transmission of HIV in everyday life together is exceptionally rare. In 17 case studies on the frequency of infection among

people living together with people infected with HIV in the same household, no HIV transmission took place among the over 1100 participants

(including more than 300 children). Details about the risks of infection for medical staff and from administering first aid are on pages 37–43.

## HOW IS AN HIV INFECTION DIAGNOSED?

In the early years of HIV infection, people show no outward signs of illness; nor are they aware of the infection themselves; but they can pass on the virus to others. Even when symptoms begin to appear, they are not obviously attributable to HIV. The first signs of AIDS are mostly general in nature: fatigue, exhaustion, fever, night sweats, diarrhoea – all of which occur with other illnesses.

Diagnosis of an HIV infection can only be made by means of an HIV test.

### The HIV Test

Laboratory medicine has in recent years developed progressively better HIV tests, which can now reliably and accurately detect infection with HIV. For all of these tests there is, however, a “diagnostic window” (cf. p. 25).

Infection with HIV can nowadays be detected at the earliest after two to three weeks and, with few exceptions, at the latest after three months. The tests in current use screen for HIV antibodies. In this brochure, such screening tests are simply called “the HIV test” (cf. pp. 24–26).

More recently, combination tests have been developed, which detect the virus itself as well as antibodies. These have made the “diagnostic window” shorter still, by six days. In Switzerland there are now the following tests for detection of HIV:

**ELISA test (HIV antibody test, screening test)** Routine diagnosis of infection with HIV is nowadays based on detection of antibodies to HIV, using the ELISA technique. When people speak of the HIV test it is this screening test that they mean. It detects HIV-1 and HIV-2 along with

all other subtypes. From the time of infection it takes on average three weeks before the first antibodies appear (see right-hand column: "The Diagnostic Window").

Even with the tests available today, it takes more than three weeks, in some cases up to three months, and in very rare cases longer still, before the virus can be reliably detected. There is therefore no point in getting tested less than three weeks after exposure to risk. It is necessary to wait three months, or else to repeat the test after three months to be sure of a reliable result.

For greater certainty in major risk situations, a further HIV test can be performed after six months. This is done, for example, where medical staff have been exposed to HIV-infected blood through injury. The ELISA test is a very reliable test method.

**Western Blot test (confirmatory test)**

The Western Blot test also detects HIV antibodies and is needed for confirmation of a positive HIV test. It is also used to resolve doubtful test results or to rule out the possibility of false-positive HIV test results.

All positive or doubtful results require laboratory confirmation using a second blood sample.

**THE  
"DIAGNOSTIC WINDOW"**

For a while, after exposure to risk, HIV infection cannot be detected, even with the HIV test. It takes a certain amount of time before the Human Immunodeficiency Virus (antigen) itself is present in a measurable quantity in the blood or else enough antibodies against the virus have formed. This interval is also called the "diagnostic window". For the virus itself the window is six days shorter than for the antibodies.

The diagnostic window varies somewhat from person to person. How long it lasts depends on the quantity of virus transmitted and on the reaction of the individual's immune system to the virus as it multiplies.

It is now reckoned to take at least three weeks from initial transmission of the disease until it can be detected using the HIV antibody test. Sometimes the diagnostic window can last up to three months, and in exceptional cases up to 6 months.

HIV can, however, be passed on even in the weeks after initial infection, when the HIV test is still negative.

**Antigen test (virus detection)** The antigen test detects the virus itself. As the virus has to multiply in the body to a level that can be detected, the antigen test also has its “diagnostic window”, though this is six days shorter than that of the antibody test. It is not suitable for screening (in place of the antibody test) because the concentration of virus in the blood fluctuates and, in certain stages of HIV, the test does not detect it. This test is used only in the first few weeks after exposure so as to detect the initial acute stage (primary infection) or else in combination with an HIV antibody test.

**Combined HIV test** The combined HIV test detects both HIV antibodies and the virus (antigen) itself. It has the advantage of being as reliable as the antibody screening test but with a diagnostic window six days shorter.

As is the case with the antibody test, a negative result from a combined test cannot be relied on less than three months after the last exposure to risk.

**Quick HIV test** The quick HIV test also detects antibodies. It is simpler to perform and the result is ready in only 30 minutes. It may only be performed in doctors’ surgeries, in HIV testing and advice centres under medical supervision or in hospitals. The quick HIV tests approved for use in Switzerland meet the high quality standards required of an HIV test.

**Home test (saliva test)** So-called home tests detect HIV antibodies in saliva or urine, but as yet are unreliable and not officially approved in Switzerland.

**Quantitative PCR test** The PCR test method (polymerase chain reaction) is not suitable for diagnosis of HIV or for diagnosis in doubtful cases.

Instead it is a method for determining the viral load (i.e. how much human immunodeficiency virus is present in the blood). The PCR is used routinely during antiviral therapy. Measurement of the viral load is important both in deciding whether or when to begin treatment, and in monitoring treatment once begun.

## GOING TO HAVE MYSELF TESTED FOR HIV

Even in these latitudes a high percentage of those infected with HIV do not know that they are infected.

If my behaviour has involved a risk of infection, it is important for me to get advice and have myself tested. This is worthwhile. Particularly if I am in love and meet a possible partner, it is important to be sure that I am not HIV-positive and that my future partner is not HIV-positive. In this situation I can go together with my partner to give blood samples for an HIV test, and we can both be given the result together. In this way I am showing openness towards my partner and creating and deepening mutual trust, which is a good foundation for a stable partnership. In this way the partner can also prove to me how important I am for him.

It is best if a doctor or other professional guides and supports me through this process. When he tells me the result of the test he can explain what I have to take into account if the test is “negative” or

“positive”, and whether a repeat test should be performed.

### “Negative” or “Positive” Test Result

If my test result is “negative”, no antibodies were found and, therefore, no HIV infection was detected. One can then say that I am “HIV-negative”. I am certain to be HIV-negative only if I did not put myself at any risk of infection with HIV in the three months before I gave a blood sample for the HIV test. If I did put myself at risk during this period, there may still be too few antibodies present to show up in the test. In this case, it is advisable to repeat the HIV test after an appropriate waiting period.

If I know I am not infected with HIV, I can breathe a sigh of relief and consider what I can do to avoid exposing myself to a risk of infection in the future.

If my test result is “positive”, then the antibodies have been detected in my blood, which means I am infected with HIV, so I am

“HIV-positive”. Before I am told this, another test (Western Blot) will be performed on a second blood sample to verify the first result. If the “positive” test result is confirmed, the HIV infection is proved.

To be HIV-positive does not mean to have AIDS; it does, however, mean that for the rest of my life I will be carrying the virus and can pass it on to others, for example through sexual contact.

The HIV infection confronts me with a completely new situation in my life and with problems that I have never had before. It is essential that I consult a doctor I can confide in and discuss my new situation with. He can tell me how I can retard the progression of the HIV infection, whether and when treatment is necessary and how I must behave in order not to infect anyone else.

#### **Where can I Have Myself Tested for HIV?**

To have myself tested for HIV I can go to my family doctor, to a gynaecologist or to any other doctor.

There are also medical laboratories or institutions where I can go to be tested anonymously. If I choose to do this it is important that I be given advice, that I properly

understand the test result, and can talk to a professional about it. The disadvantage of anonymous testing is that when the result is positive, no further support and guidance is guaranteed.

As a test of this kind usually causes anxiety, it is preferable if I consult a doctor whom I trust, and who can advise and support me.

The HIV test is performed in Switzerland only with the patient’s consent. It is not performed routinely as part of a general medical examination or check-up, or on admission to hospital. I have to ask for an HIV test expressly and cannot assume that the doctor would have told me if I had become infected with HIV.

#### **How do I Benefit from Testing and Advice?**

Reasons for having an HIV test and advice on HIV:

- If I go to a doctor for personal advice I can ask questions relevant to my particular situation, can resolve uncertainties, and address anxieties and feelings weighing on me. If I have no reason to fear becoming infected with HIV he can reassure me and inform me about the routes of infection. If

I have put myself at risk, it is always worthwhile going for an HIV test and advice.

- An HIV test affords certainty as to whether an HIV infection is present or not.
- Knowing the test result – even when it is positive – generates less stress than being anxious about my HIV status without knowing it. Permanent anxiety about being infected with HIV and the fear of having infected someone else can give rise to mental instability.
- Knowing my HIV status puts me in a position to get medical help in good time: the test result – whether positive or negative – help the doctor treating me to interpret symptoms correctly and provide me with the best treatment. Tuberculosis or syphilis, for example are treated in one way if I am HIV-positive, in another if I am HIV-negative.
- Early medical treatment (antiretroviral therapy) can retard the progression of HIV. The slower the virus reproduces itself and spreads in the body, the longer my own immune system can go on fighting diseases and life-threatening situations that often accompany AIDS.

- An HIV-infected woman who is pregnant can, by taking preventive measures during pregnancy (antiretroviral therapy) and childbirth (caesarean section) and by refraining from breastfeeding, reduce the risk of passing on the disease to her child from 25% to less than 2%.
- If I know I am HIV-positive I can conduct myself so as not to infect anybody, least of all my own partner.
- If I am HIV-negative I can conduct myself so as not to become infected with HIV myself.

#### **When Does it Make Sense to be Tested?**

- If I have in the past exposed myself to risk of infection with HIV.
- No earlier than two to three weeks after I risked becoming infected; if the test result is negative it should be repeated after three months.
- If I want to begin a faithful relationship and either I or my partner is at all uncertain as to my HIV status.
- If we want to have a child and are unsure of the HIV status.
- When donating blood, sperm or organs the HIV test is compulsory.

## HOW CAN I PROTECT MYSELF FROM AN INFECTION?

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Knowing the routes of transmission and the risks of infection of HIV makes understanding the effective possibilities of protection easier. The risks people take and their desire to protect and safeguard themselves vary. Everybody can consider his own measures for protection and choose those which best suit him.

When doing so it is important to remind oneself that it is not only a matter of protecting oneself from infection, but that one could also (unknowingly) be a risk to others. The following chapters will discuss the possibilities of protection in different areas.



## SEXUAL CONTACT

These days a sexual relationship carries the danger of an HIV infection. For this reason, it is particularly important to choose one's partner very carefully. An infection

can only be ruled out if the partner is not infected. Therefore, the fewer sexual partners a person has, the lower the risk of being infected with HIV.

### CHOOSING A PARTNER CAREFULLY

Choosing a partner carefully means finding a partner who is not infected with HIV, who has a similar attitude to life and the same ideas about love and taking precautions as I have. Before I start a sexual relationship with my partner, I should get to know him or her well, because even a doubt that my partner or I could be infected with HIV makes it impossible to have a sexual relationship without fear.

An open talk about possible past and present risks of infection is important at the start of a love relationship, but that is only a part of what is needed. Getting to know a partner's habits, friends and family is also important. This

creates familiarity and intimacy so that I can better judge if his or her word can be trusted. Only then can a couple assess whether a past risk of infection with HIV can be ruled out in both partners. If an infection with HIV cannot be ruled out, it is sensible for both to be tested for HIV.

Sexuality only becomes a really fulfilling experience in a genuine and open relationship between equals. Such intimacy and mutual goodwill must first be established. Sexuality is an enriching, integral part of love, partnership and marriage; however, the experience becomes insubstantial if the relationship is not a sincere and close one.

### Don't give HIV a Chance, get Tested!

If there is a chance that one of the partners could have been infected in the past, it is definitely worth having an HIV test. As previously mentioned, it takes several weeks after an infection for sufficient antibodies to be produced. An HIV test can, therefore, still be “falsely negative” during this time (cf. p. 25). Nevertheless, an HIV test at the start of a relationship can be useful as an indication. The higher the risk of an infection (from injecting drugs, sexual contact with people who are at risk, such as drug addicts, homosexuals or people who

### Important!

Choosing a partner carefully, the HIV test and using condoms are three ways of ruling out, or at least reducing, the risk of an infection with HIV – combined they are all the more effective. Everyone can decide for themselves the risk they are prepared to take through the choice and combination of these suggestions.

frequently change partners), the more vital it is to repeat the HIV test after three months.

## LOVE AND SEXUALITY

I can protect myself

- by living in an *faithful relationship* with a partner who is not infected with HIV, which means: neither partner has any extramarital affairs;
- by *choosing my partner carefully* and, at the beginning of the relationship, waiting until I know my partner so well that I can be sure he or she is not infected before I start a sexual relationship;
- by *not changing my partner frequently and casually* and especially, by not entering into fleeting sexual adventures, e.g. at parties or on holiday;
- by *not going to any prostitutes*.

The use of condoms reduces the risk of a transmission of HIV during sexual intercourse, but does not rule it out.

## The Condom

The condom reduces but does not rule out the risk of transmission of HIV.

Studies of couples where only one of the partners is HIV-positive have shown that with regular and correct use of condoms the risk of transmitting HIV is five to ten times lower than for couples not using condoms. There is, therefore, a residual risk – due, amongst other things, to defective condoms, to slipping, tearing or bursting of condoms, or to the fact that body fluids nonetheless come into contact with a partner’s mucous membrane.

Condoms are therefore an appropriate way of avoiding infection with HIV mainly for those taking a calculated risk of infection, as for example when one partner in a couple is HIV-positive, or those not knowing their sexual partner well enough to be sure there is no risk of being infected (holidays, sexual adventures, “one-night stands”, prostitutes, etc.). For those engaging in any such sexual activity (oral intercourse included) it is absolutely essential to use a condom correctly.

### A Single Sexual Contact can Suffice!

“It definitely won’t get me. I haven’t had many sexual partners.” That

## CORRECT USE OF CONDOMS

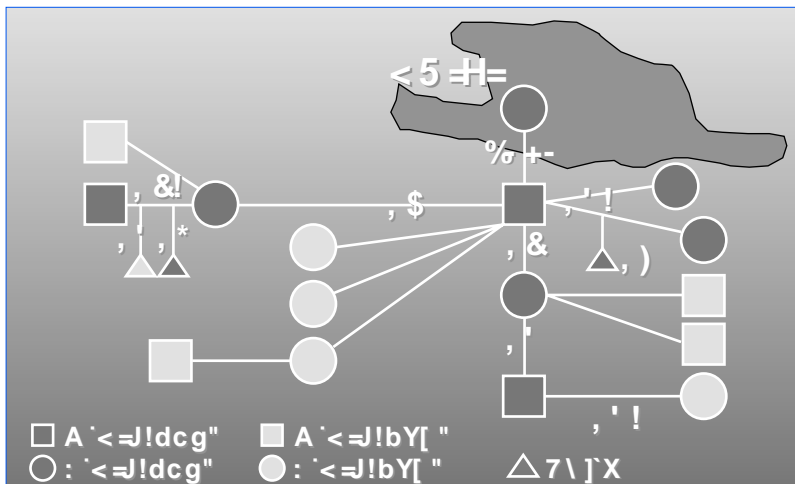
- Every time you have sexual intercourse use an unused, tested condom.
- Use the condom from beginning to end of each instance of sexual intercourse.
- Put on the condom as soon as the penis is erect and before any contact between the penis and the partner’s mucous membranes (vagina, mouth, anus) or with the partner’s body fluids. Hold the tip of the condom and roll it over the erect penis. Leave a small space empty of air at the tip of the condom and make sure that there is no air between the penis and the condom.
- If there is not enough vaginal fluid, use a suitable lubricant. This can be obtained at a chemist’s or druggist’s. Do not use fluids such as hand cream or baby lotion; these contain oils and so increase the risk of the condom tearing during intercourse.
- After ejaculation withdraw the penis from the vagina straight away, holding on to the condom at the base of the penis to prevent it from sliding into the vagina.

this too could be a miscalculation is shown by the following example of a chain of infection (cf. diagram), taken from the 80s, when there were far fewer HIV infections than there are now.

A 21-year-old bank employee had contact with a prostitute during a holiday in Haiti in 1979. In the following eight years he had contact with seven women, four of whom he is proved to have infected. With one of these women, he had two children. One of them was HIV-positive. Two of the other three women infected with HIV married later, infected their husbands, and one of them also infected her child. This was found out

by tracing the chain of infection. The interesting and alarming point is that all this was only discovered because one of the men who was eventually also infected, happened to want to donate blood. He was tested, found to be positive and was stunned. It "couldn't be possible". In this chain of infection there was nobody who indicated any obvious risk factors, such as frequent changing of partners or injecting drugs – except, perhaps, the very first person, who did after all go to a prostitute and had several partners.

If the man who went to the prostitute had been tested sooner, several infections could certainly have been prevented.



The chain of infection in a town with 50000 inhabitants. After one contact with a prostitute in Haiti in 1979, at least 9 people became infected with HIV, and this was only discovered thanks to a routine check on a blood donor. (According to M.G. Koch, Karlsborg, Sweden.)

## DRUGS

### Drug and Alcohol Intoxication

More and more, and younger and younger people are starting to take drugs and drink alcohol. However, often they do not recognise the risks involved. Some of these young people become addicted to the drugs after a short time and even start injecting them. They ruin their health and their lives. Even if someone “only” wants to get high occasionally, this can have serious consequences for that person’s life.

In a state of intoxication people are more likely to do something which they would regret when sober. One is no longer capable of recognising dangers since drugs and alcohol cloud one’s feelings for reality and blur one’s sense of responsibility, and one is then more likely to venture into risky sexual contacts; drugs and alcohol lower our natural inhibition levels. By this means HIV can be passed on, as can other sexually transmitted diseases, and therefore it is part of all-round protection from HIV to stay clear of drugs and avoid consuming too much alcohol.

### Drug Addiction

Drugs not only create a state of intoxication, which is dangerous in itself, but they also cause addiction. Drugs like heroin, cocaine and amphetamines in particular, are extremely addictive, so that a drug user is soon no longer in command of all his/her faculties. This is disastrous for a young person. He continually has to increase the doses to obtain the same effect. The more time passes, the less likely he is to stop taking the drugs. He is no longer free to decide whether he wants to stop or not.

In addition to the particularly grave problems of addiction, these drugs also lead to further damage of the body and mind. They can cause serious physical illnesses such as strokes or heart failure and much else. Psychological illnesses like paranoia, lethargy and depression can also set in.

Drug addicts often inject heroin, cocaine and amphetamines into their veins, and not always with clean, unused syringes. A lot of drug addicts have diseases which can be transmit-

ted through blood remaining in used syringes. These include potentially fatal diseases, as for example HIV, and more commonly hepatitis B and C, more rarely syphilis. HIV and other infections can thus come about through exchanging syringes. Drug addicts are, therefore, advised never to share a needle.

A further consequence of addiction is that drug addicts cease to take care of their health. Drug abuse leads to a dulling of one's feelings for oneself and the people around one. Drug addicts are hardly capable of establishing deeper relationships. Their whole lives revolve around being high on drugs, obtaining and consuming drugs. Against their better judgement, they share needles; they

have casual sexual contacts and often do not even use condoms. In this manner they are constantly exposing themselves to new risks of infection.

The best protection from AIDS for a drug addict is to stop taking drugs. In most cases a drug addict is unable to break free of the drugs without help. There are, for this purpose, treatments aimed at abstinence which take place in specialised institutions. We advise addicts to consult a doctor who can start such a treatment and can help choose a suitable institution. The AIDS hotline of AIDS Information Switzerland provides information on +41-1-261 03 86.

Avoiding AIDS is one of the strongest reasons for never touching drugs.

## PROTECTION FOR MEDICAL STAFF

Doctors and medical staff are at risk of being infected with a transmissible disease by way of their profession. In the first half of the last century doctors and nurses still contracted fatal diseases from their patients relatively often. After first antibiotics and then also reliable vaccines were developed, this risk for medical staff was fortunately as good as eradicated in our part of the world.

As a result of the HIV epidemic doctors, dentists and medical staff do however, increasingly have to take precautions against infectious diseases. Surgeons and operating-room nurses are particularly at risk.

It has always been taken for granted that doctors do their best for every patient. The ethics of medicine require a doctor to treat a patient without considering personal risks and without prejudice. It should make absolutely no difference whether a patient is suffering from a life-threatening infectious disease, whether he is rich or poor, whether he can be treated successfully or whether he is suffering from an incurable disease.

### HIV, Hepatitis B and C

HIV, hepatitis B and C viruses (infectious jaundice) use the same routes of transmission but are differently infectious. Transmissions of the virus from pierce wounds and cuts with instruments contaminated with blood carrying HIV occur in about 0.3 percent of cases. The risk of blood splashes on the conjunctiva of the eye and the mucous membrane of the mouth and the nose is, however, calculated at as low as 0.1%. Since HIV can only survive outside the body for a limited amount of time, the danger of infection through blood is reduced within a few hours.

In contrast, the risk of infection with the hepatitis B virus is considerably higher. In patients' blood the risk ranges between 5 and 40%, depending on the concentration of pathogens. Furthermore, this virus is considerably more stable outside the body so that blood soiled objects remain infectious for a longer time, probably up to three days. The risk of infection with the hepatitis C virus lies between that of HIV and that of

hepatitis B. Despite all these considerations, it must be remembered that HIV leads to death far more often than the hepatitis viruses do.

### Infection of a Nurse with HIV

In Switzerland there have been several hundred cases in which healthcare workers have come into contact with blood from HIV-infected patients. In 1995 the first such an industrial accident was reported in the *Bulletin of the Federal Bureau for Health*. A nurse had correctly disposed of a needle in a prick-proof container but injured herself on another needle in the container. It was later discovered that this needle had been used to

draw blood from an AIDS patient. After three months an HIV seroconversion (the HIV test was positive) was detected in the nurse. Using molecular biological methods, it was established that the nurse's HIV type was identical to that of the AIDS patient. Other routes of transmission could be ruled out.

### Protective Measures

There is a range of measures of protection for medical staff which do not always rule out the risk of an infection with HIV, but which can considerably lower it. It is, therefore, essential for medical staff to be thoroughly schooled in the application



Medical staff use gloves as a protection against contact with blood.

of these measures. It is a great help if the doctors know whether their patients are infected with HIV or not. (Consequently, anyone who has been exposed to a risk of infection with HIV should be tested for HIV and inform his doctor and dentist of the result.)

In general, all contact of skin and mucous membrane with body fluids should be avoided (cf. box below). A calm and circumspect way of working is essential. As soon as there is a possibility of contact with a body fluid carrying HIV, it is advisable to wear latex gloves and protective goggles. Sharp and pointed instru-

ments, such as syringe needles, are particularly dangerous. Injuries often occur when the protective cap of the needle is being replaced after a blood sample has been taken.

Needles and syringes should be immediately disposed of in a prick-proof container after use without replacing the protective cap on the needle. Medical staff should be inoculated against hepatitis B.

The team in an operating room is especially at risk from prick wounds or cuts. If a person infected with HIV needs to be operated on, the surgery team should consist solely of people with many years of experience. Ad-

### **RULES OF HYGIENE FOR HEPATITIS B AND HIV INFECTIONS**

- No contact of infected body fluids (blood, saliva, excretions, etc.) with damaged, inflamed skin or mucous membrane.
- Wear protective gloves (latex) when treating wounds.
- Wear protective gloves (latex) when washing patients in case body fluids come into contact with skin or mucous membrane.
- Do not share shaving utensils, toothbrushes and the like.
- Wash dishes, bed linen and clothes thoroughly, preferably in the washing machine.

ditional special protective measures are advisable.

If, despite all protective measures, there is contact with a body fluid infected with HIV, immediate disinfection is required. An HIV test should be carried out and repeated after a few months. Until an HIV infec-

tion can be ruled out, sex should be avoided or one should at least use a condom. One should refrain from donating blood during this period. If there is a serious possibility of infection with HIV, post-exposure prophylaxis must be considered (cf. p. 61).

## ACCIDENTS AND FIRST AID\*

Accidents outside the medical world also contain a theoretical risk of infection with HIV or hepatitis B and C (infectious jaundice), the hepatitis viruses being more communicable. There is a danger of injuries from blood soiled instruments (e.g. used needles), and there is also a risk that blood might be splashed into the eyes or onto the mucous membrane of the mouth and nose. In addition, a risk of infection exists when blood comes into contact with an open wound or skin disorders. It should be emphasised that most people are rarely confronted with these risks and that they are very small. As a rule, they can easily be avoided. It is important to realise that general contact at one's workplace or social contact, such as the common use of eating facilities or toilets, bears no risk of these infectious diseases.

### HIV as an Occupational Hazard

There is a higher risk for people such as rescue workers and emergency

staff, warders in penal institutions, police and customs officers or social workers who frequently come into contact with drug users.

Used needles left lying around by drug addicts have become a problem in some places in recent years. This is why, depending on local conditions, employees in the waste disposal and sewage maintenance industry, as well as those working in public toilets and parks, also belong to the group of people at higher risk.

Avoidance of cuts and prick wounds is the most important measure to take outside the medical world, too. Sharp or pointed blood-soiled objects should only be handled with instruments and disposed of in prick-proof, sealable containers. Suitable protective gloves should be worn at all times if there is the possibility of contact with blood. Protective goggles and a mask should be worn if blood could splash into the eyes or onto the mucous membrane of the mouth or nose.

\* This chapter was largely taken from the article in the SUVA Bulletin No. 62, 1996: "Rescue and emergency staff: At risk from contact with blood".

Employees who might come into contact with blood or body fluids containing blood, should be vaccinated against hepatitis B.

### First Aid

Theoretically, administering first aid can lead to the transmission of pathogens. Such risks are, however, minimal. To this day there is no record of any cases of HIV or hepatitis B and C (infectious jaundice) transmission which could be traced

to giving first aid. A helper in an emergency avoids getting injured himself. Protective gloves should be worn when dealing with bleeding wounds and a suitable mask should be worn during resuscitation, or the mouth-to-nose method should be applied. In this manner immediate first aid can be given without any danger. The fear of a possible infectious disease should, therefore, never lead to failure to provide first aid.



In emergencies where there may be contact with blood, gloves should always be worn.



SUVA recommends using a breathing aid during resuscitation in emergency cases.

### **Sport**

The only time a risk of transmission in sport cannot entirely be ruled out is in body contact sports where there is a higher risk of injury. There has only been one documented case of a transmission of hepatitis B in sport, between Sumo wrestlers. In the case of HIV, the only recorded HIV transmission was that involving an Italian football player. It is, however, still not clear whether that football player did not become infected while working in a rehabilitation centre for drug addicts.

### **If it has Happened Anyway**

If there has been contact with blood despite taking the necessary precautions, the affected skin should be immediately and thoroughly cleansed with soap and water and/or should be treated with alcohol (70%) or an iodised disinfectant. Should blood come into contact with mucous membrane, this should be immediately and thoroughly cleansed with water or with an artificial lachrymal solution for at least ten minutes. A doctor should be consulted immediately after any incidents which involve a risk of infection.

## WILFUL INFECTION OF OTHERS WITH HIV IS NO TRIVIAL MATTER

Extract from a judgement of the Federal Court, dated 20/10/1999 (BGE 1255 IV242)

### Facts

“In late 1981 the Kenyan citizen X. (born in 1946) formed an intimate relationship with Y. (born 1949), who in July 1983 gave birth to a daughter. The relationship was for various reasons difficult and subject to major fluctuations. Periods of cohabitation frequently alternated with longer periods of separation. When in late 1991, after a longer period of separation, there was talk of renewing the intimate relationship, Y. made this conditional upon the result of an HIV test, to which X. agreed. In January 1992 Y. made appointments for herself and X. with their family doctor to arrange for an HIV test. Y.’s test result was negative. When she asked X. about his test result, he falsely stated that this too was negative. X. did not in fact have himself tested for HIV in January 1992. He had already done so in June 1990 after a stay in Kenya, on which occasion the test

had shown him to be HIV-positive, a fact which he had known since 2 July 1990. Relying on the correctness of X.’s assertions, Y. entered once again into an intimate relationship with him. From late March 1992 until April 1993, between once per week and once per month on average, the couple had unprotected sexual intercourse, whereby X. passed on the Human Immunodeficiency Virus to Y. Between September 1991 and late December 1991 X. had sexual intercourse with Z. [another sexual partner of X.’s, Ed.] on five occasions or thereabouts: on four of these, intercourse was unprotected. From her, too, he concealed his HIV-positive status, known to him since 2 July 1990. Z. was not infected ...

### Judgement

The Swiss Federal Court upholds the verdict of the trial by jury in the Canton of Zurich, which on 9 November 1998 found X. guilty:

- ‘of grievous bodily harm according to Article 122 Paragraph 1 Criminal Code

- of the spreading of human diseases (Article 231 No. 1 Criminal Code)
  - malice aforethought (Article 18 Paragraph 2 Criminal Code)
  - transmission of the Human Immunodeficiency Virus through unprotected sexual contact, the HIV infection being by its very nature grievous (life-threatening) bodily harm and a dangerous transmissible human disease (E.2.), malice aforethought being evidenced by (E. 3.) ...',
- ... and therefore, for this and for driving while under the influence

of alcohol (Article 91 Paragraph 1 of the Road Traffic Act), sentences him to three years' imprisonment.

At the jury trial it was established that X. has a fundamental obligation to pay compensation in full for losses consequential to the infection with HIV, which he culpably caused, and referred this claim to be assessed in quantitative terms by way of civil proceedings. As restitution, the court orders X. to pay the injured party Y. the sum of Fr. 80 000 and the daughter A. Fr. 20 000, adding interest at 5% as of 1 January 1994 to each payment ..."

# HIV – THE PATHOGEN OF AIDS

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The source of AIDS is HIV. Two different AIDS viruses are known today: HIV-1 and HIV-2, both of which have innumerable genetic variations, i.e. varying genetic material. HIV-1 alone is known to have at least ten subtypes worldwide. HIV is a so-called lentivirus (lentus = slow). Lentiviruses are very dangerous pathogens as they have recourse to ingenious adaptation and survival strategies. They cause chronic, generally fatal illness.

HIV is not an independent organism. In order to reproduce, it depends on certain human cells for “housing”. These are, therefore, called host cells. During its life cycle (cf. diagram p. 54), the virus settles in a human host cell. Its aim is to smuggle its own genetic information in that of a human, like a cuckoo and its eggs. In order to install itself in the genetic make-up of a host cell, the virus first must transform its genetic code, composed of RNA (ribonucleic acid), into the substance which carries our genetic information, i.e., from RNA to DNA (deoxyribonucleic acid). It can achieve such a transformation with

the help of a “transcription enzyme” which it carries. The technical term for this enzyme is “reverse transcriptase”. After this metamorphosis the virus becomes incorporated in the genetic material of the host cell, which is infected for the rest of its life.

Once it has smuggled itself into the command centre, the virus becomes one of the commanders-in-chief and can steer the entire metabolism of the cell. This means, it can give orders to produce numerous new HIV cells, which is one of the reasons why the human body cannot cope with HIV.

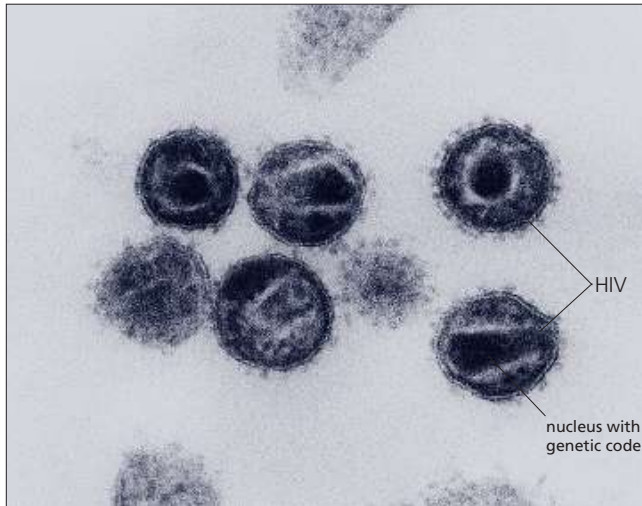
## The Variability of HIV

Another reason lies in the changeability of the virus. Since the “conversion enzyme” does not function consistently, there are often “conversion errors” which occur during the transformation of the viral RNA to human DNA. These malfunctions help the virus and harm humans even more, as they result in more and more new HIV variants, i.e.

modified HIV with partially new characteristics. For example, there are viruses which reproduce faster and speed up the development to the final stage of AIDS. Further variants differ in how infectious they are, which could be the reason why some people are infected more quickly and others have better luck. There are not only different HIV variants among different people, but also within one and the same person. Researchers have been able to isolate more than a hundred different varieties in one AIDS patient.

The changeability in the reproduction of the virus gives HIV the capacity to adapt to its environment. We also call this the “high flexibil-

ity” of the virus. This is how HIV becomes resistant to medication. Since many different forms of HIV can develop, it does not take long until one variant evolves against which the medication is powerless. The resistant viruses can then continue reproducing unhindered by the medication. Let us take, for example, the medicine Zidovudine, also called AZT: AZT prevents the reproduction of HIV by blocking the conversion enzyme, “reverse transcriptase”. During a test, resistant HIV showed up after only two days of treatment with AZT. Development of a vaccine has so far been unsuccessful – mainly because of the rapid rate at which HIV mutates.



HIV under an electron-microscope magnified 200 000 times.

## WEAKENING AND DESTRUCTION OF THE IMMUNE SYSTEM

The human immune system has two principal duties. On the one hand, it combats intruders from outside, such as bacteria, viruses, fungi, etc., which give rise to so-called infectious diseases, i.e. “contagious” diseases. On the other hand, it prevents the development of cancer by tracking down and destroying damaged or degenerated cells (cancer) occurring naturally in the body.

Our immune system consists of different types of defence cells (white blood corpuscles) such as macrophages, helper cells, and killer cells (the latter two are called T lymphocytes), as well as those cells which produce antibodies (the so-called B lymphocytes). The different types of defence systems are finely co-ordinated and work closely together. If one cell type in the immune system fails, the whole system can malfunction.

It is precisely because HIV attacks the human immune cells that it gradually stops the natural immune system in humans from functioning. As a consequence, foreign intruders

can no longer be effectively eliminated from the human body. This happens differently in each of the types of defence cells.

### Macrophages as Trojan Horses

Devouring cells (macrophages in technical terms) can take on almost any desired form, move through organs and pass through the tiniest opening. In this way they can also leave blood vessels, even if there has been no injury; they drift into tissue and then back into the blood vessels (cf. diagram p. 16).

After an intruder is “devoured” at one of the gateways into the body, they warn other units of the body’s immune system of the invasion and pass on the alien’s distinctive features so that the other units can arm themselves against it. Macrophages also capture and absorb HIV (cf. photographs p. 53). Instead of being killed in these immune cells, HIV misuses them to its end. Involuntarily the macrophages become a Trojan Horse with which the foreign soldiers are brought into the body

and distributed there, as it were. Once the macrophages have entered into an organ, HIV starts to reproduce, which usually results in the macrophage bursting and thus being destroyed (cf. photograph p. 50). First of all, the macrophages collect in the lymph nodes, a co-ordinating point of the immune system, which explains the large amount of HIV which can be found there. HIV can multiply in large numbers here but is also under intensive attack. The lymph nodes, which involuntarily become reservoirs for HIV, swell during the course of an HIV infection. Newly formed viruses are washed out into the blood where they can invade and damage immune cells, e.g. helper cells.

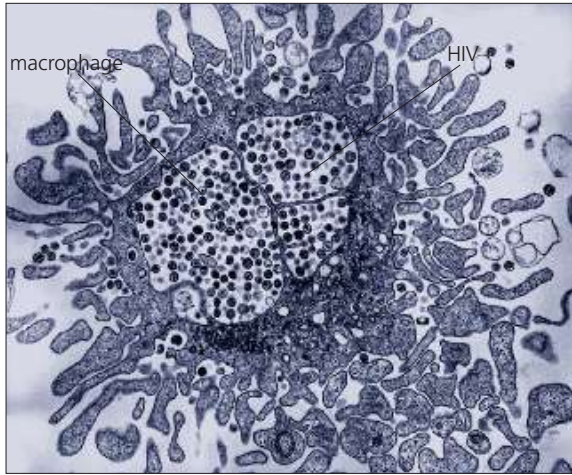
### Helper Cells are Put Out of Action

The helper cells in blood (a sub-group of white blood corpuscles, so-called T4 lymphocytes) play a key role in the human immune system. They could be considered as the control centre of the body's defences. They recognise pathogens such as viruses and bacteria, and activate other immune cells.

It is exactly this central unit of the immune system which HIV has chosen as its main host cell: the virus can attach itself to the surface of a helper cell especially well. As with macrophages, it penetrates helper cells and incorporates itself into their genetic material. HIV also misuses helper cells for its reproduction



A large amount of HIV is located near a macrophage. The marked HIV is in the process of penetrating the macrophage. How this actually occurs is shown in the photographic series on p. 53.



This electron-microscopic photograph depicts a macrophage which has involuntarily become a producer of HIV. The HIV has multiplied to such a degree that the macrophage has succumbed.

and therewith renders them inactive. Finally, more and more helper cells are put out of action. The degree of damage to the immune system can be measured by the quantity of helper cells: the fewer helper cells a person has, the weaker his or her defences are.

### **Insufficient Antibody Defences**

All infectious diseases cause the body's immune system to form antibodies and to activate the T8 lymphocytes (killer cells). These defence mechanisms neutralise and destroy intruders such as bacteria and viruses. They are also formed to fight the virus, but only after a delay of a some weeks or months. The virus

meanwhile multiplies so rapidly that it can no longer be wiped out, and thus wins the decisive battle at the very outset.

Antibodies produced against HIV can be detected in laboratory tests and are proof that a person is infected with HIV. The standard HIV test consists of the detection of such antibodies in blood.

### **The Lost Battle against HIV**

As a rule, an HIV-infected person will notice nothing of the HIV infection for many years. It was once believed that HIV remained hidden and dormant during this time, to multiply only at a later point and start its destruction of the immune system.

Today we know that, right at the start, the virus sets about the slow and systematic destruction of the immune system. Over the years, the production of the virus and the dying off of the T4 lymphocytes outweighs the body's efforts to fight the virus. After an average of ten years there are so few white blood corpuscles that the immune system can no longer cope with other infections and cancer cells. The final stage of AIDS sets in with such infections as pneumonia and cancer.

In summary, it can be said that HIV undermines the human immune system, paralyses it after a defensive battle lasting years and finally destroys it. This is why the virus is called "human immunodeficiency virus". The result of a weakened immune system brought about by an infection with HIV is an increased susceptibility to a range of diseases, especially contagious diseases and cancer. These constitute the final stage of an HIV infection, the disease AIDS.

# LIFE-CYCLE OF HIV

## 1. Penetration of HIV into a Host Cell

HIV attaches itself to the host cell which in turn absorbs the virus into its core (a, b, c).

The virus is encapsulated in a bubble (d).

HIV breaks the bubble open and transmits its genetic code (RNA) and the enzyme "reverse transcriptase" into the core of the host cell (e).

The genetic code of the virus (RNA) is transformed into DNA, the material of human genes, by the reverse transcriptase. Now the host cells treat the genetic code of the virus as their own.

The host cell incorporates the genetic information of the virus into its own genetic code.

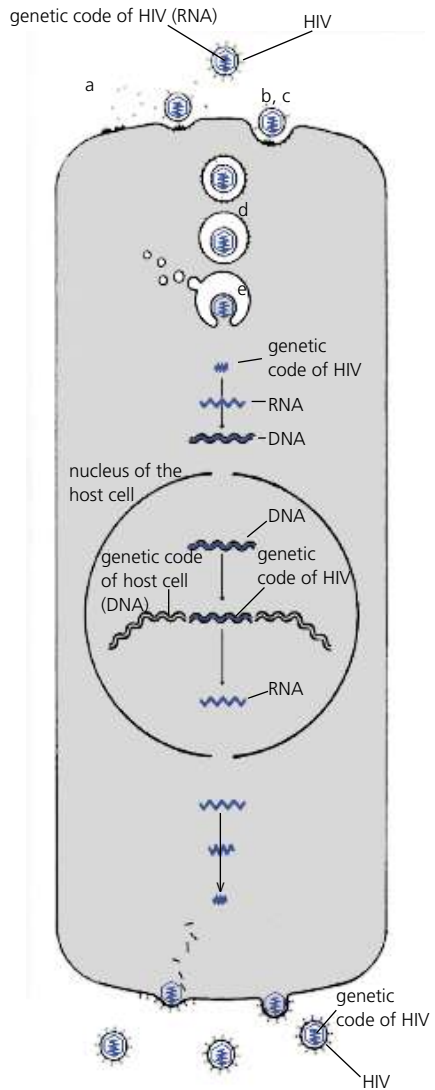
The genetic information of the virus remains unrecognised in the nucleus of the host cell.

## 2. Reproduction

The incorporated viral genetic code can produce as many copies of its genetic material (RNA) as it likes.

Using elements in the host cell, the RNA copies can construct new HIV.

The HIV leaves the host cell.

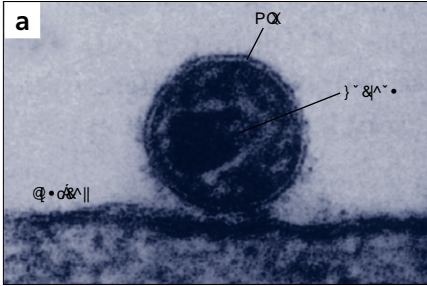


The life cycle of HIV

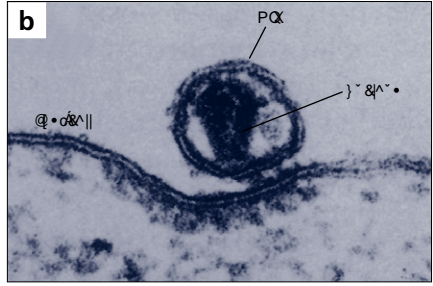
The first phase corresponds to the electron microscopic photographs a-e on p. 53.

(Diagram from M.G. Koch, simplified).

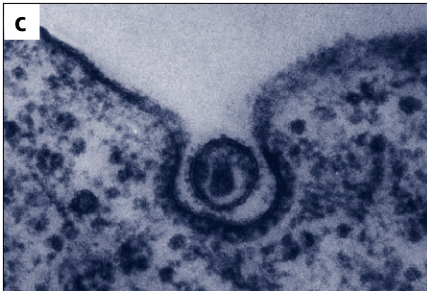
3. Photographic Series:  
 HIV Penetrates a Macrophage and Smuggles its Genes into the Cell's Core



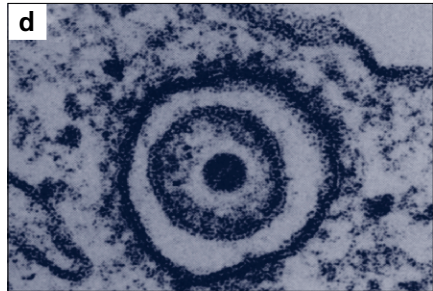
HIV on the surface of a macrophage.



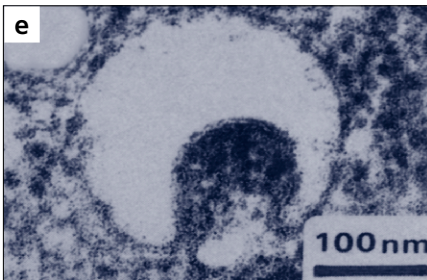
The HIV attaches itself to the macrophage. The cell membrane is starting to yield.



The cell membrane engulfs the HIV.



The HIV is in a bubble inside the macrophage.



Instead of being killed and digested by the macrophage, the HIV transposes its genetic material into the centre of the macrophage. Now the genetic information of the virus can be built into the genetic information of the macrophage (cf. diagram page 52).

(magnified about 200000 times)

## COURSE OF THE DISEASE

In this chapter the disease AIDS will only be discussed briefly, but enough for the character of the disease to be understood.

In the medical world the HIV infection is known as a chronically progressive disease, which simply means that the disease progresses continually. After a period of quiescence lasting years, it will as a rule lead to the final stage of AIDS and end in death. The course the disease will take cannot be predicted. A variety of diseases and symptoms can appear in varying degrees and for varying lengths of time. After studying hundreds of AIDS patients' medical histories, any individual case will seem typical and yet always completely different.

Sometimes HIV even affects certain organs, for example the brain, and produces an inflammation there. However, usually the outbreak of the disease is due simply to the HIV weakened immune system, which can no longer protect the body against infectious diseases or cancer. Which disease breaks out first is often

pure chance. Anyone who has a cat or a dog can become ill with toxoplasmosis, an infection which can lead to paralysis and epileptic fits; it is caused by the protozoa *Toxoplasma gondii*, which is transmitted by close contact between animals and humans. Anyone with a bird can develop cryptococcosis, a fungal infection which can cause meningitis or pneumonia. Anyone who has spent time in a country where tuberculosis is common might develop tuberculosis. Which disease an HIV-infected person finally falls ill with depends therefore on chance and environment.

A peculiarity of AIDS is that it can open the way for many infectious agents which would normally be harmless for humans, because an intact immune system can easily deal with them. This is not the case with an immune system weakened by HIV. Doctors call these unusual infections "opportunistic infections" (cf. box p. 58).

The HIV disease is divided into three stages:

- Stage A (acute and silent infection)
- Stage B
- Stage C (AIDS)

These stages cannot be clearly separated from each other, the transitions are ill-defined. This is also expressed in the American health authority's categorisation of the stages (cf. box p. 57).

#### **Stage A (Acute and "Silent" Infection)**

Often an acute infectious disease which can last from 1 to 4 weeks will arise a few weeks after an infection. Symptoms similar to those of influenza appear, such as fever, headache, and rheumatic pains, which then pass by. Sometimes there is a swelling of the lymph nodes. These are general symptoms which can accompany many diseases. During this time an HIV test will show up negative. It therefore, only becomes clear in retrospect that these symp-

toms occurred due to an HIV infection and not for other reasons. Many people infected with HIV think they just suffered a normal case of influenza and, as a consequence, do not have any particular recollection of the symptoms.

Afterwards, the infection remains apparently silent (asymptomatic) for an average of 10 years. However, antibodies against HIV can already be traced indicating that an HIV infection has occurred. As the infected person feels healthy and fit, this phase is also called the latency period (latent = hidden, concealed). HIV is, however, not "hibernating" during this time. As previously explained, the reproduction of the virus continues in a number of host cells (above all in the lymph nodes), and over the years the immune system becomes increasingly damaged. The only externally visible sign is an occasional painless swelling of the lymph nodes.

Since antiviral combination therapy was introduced in the mid-nineties, it makes less sense in practice to divide the progression of HIV into stages.

This therapy can now achieve what was hitherto impossible: namely to return the patient to a more favourable stage of the disease

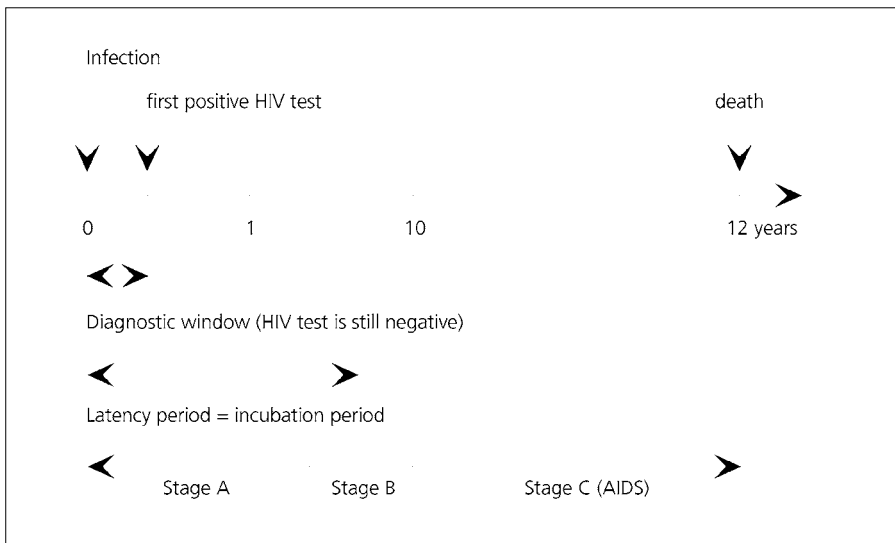
(cf. "Treatment of Infected Persons" p. 59f.) and, since its introduction, far fewer patients have fallen victim to opportunistic infections or to cancer, and even established illnesses can go into full remission through administration of a fresh course of the therapy.

The reduction in helper cells (T4 lymphocytes) can be measured in the blood. This provides a means of assessing the degree of damage to the immune system. This is indicated by the categorisation into laboratory stages 1 to 3. In the first stage, the carrier's immune system is still good, in the third it is already damaged.

### Stage B

Stage B is so to speak the transition period between stages A and C. The first diseases start appearing, the harbingers of AIDS. This stage lasts between several months and a few years. Typical signs of the disease are: painless swelling of the lymph

nodes in different parts of the body, inexplicable, repeated fever or nocturnal sweating over a longer period of time (more than a month), persistent diarrhoea, drastic loss of weight, and an increasing deterioration of the patient's condition. Infections such as shingles (herpes zoster) and fungal infections of the mouth or genitals (thrush, candidiasis) can also arise. The fungal infection thrush is an example of the fluid transition from stage B to C. As long as the white fungus only affects the oral cavity, the infection is considered as part of stage B; if the oesophagus is also affected by thrush, it is classified under stage C.



Time line of the average progress of an HIV infection.

### Stage C (AIDS)

Life expectancy with AIDS, the final stage of the HIV infection, averages 18 months without treatment. The clinical pictures presented by AIDS are multifarious; every kind of organ can be affected. Very often it is the so-called opportunistic infections from various pathogens such as, bacteria, viruses, fungi, and protozoa which spur the syndrome. Pneumonia, pneumocystis carinii-pneumonia (PCP) or an infection of the brain with the protozoa toxoplasma, a unicellular organism, are common. Tuberculosis is growing in significance, particularly

among HIV-infected immigrants. The immune deficiency syndrome AIDS also boosts the development of certain types of cancer: Kaposi's sarcoma or cancer of the lymph nodes are typical. Kaposi's sarcoma can be very unusual in its onset, for instance in the form of bluish-brown blotches on the skin or mucous membrane which grow relatively fast and, if left untreated, lead to disfigurement and, finally, death. HIV can also infect nerve cells and damage them. The consequences can range from signs of paralysis, loss of memory, and mental retardation to mental deficiency (dementia).

<b>Categorisation of the Stages of an HIV Infection (CDC Classification)</b>			
Laboratory stages	Stages of disease		
	A	B	C
T4 lymphocytes/ $\mu$ l	asymptomatic infection	symptoms, not yet AIDS	symptoms, AIDS
1: more than 500	A1	B1	C1
2: 200 to 499	A2	B2	C2
3: less than 200	A3	B3	C3

Doctors divide the HIV infection into stages. Since 1993 mainly the above classification by the American Centers of Disease Control (CDC) has been used. Treatments can be applied and prognoses can be given according to these stages. A1 has the best prognosis and C3 the worst.

### **“Opportunistic Infections”**

Without noticing, we spend all our lives in an invisible world of millions of microbes (viruses and bacteria), which do not harm us in the least if our immune system is functioning well. Should our immune system be weakened, however, they can become dangerous for us and cause diseases. In the long run, a functioning immune system is essential for warding off this pressure of infection. If it does not function properly, harmless parasites will become active. About half of all adults carry the parasite toxoplasma in either the brain, the heart or the muscular system. This does not

make us humans sick, unless of course, our immune system stops functioning. This can lead to suppurative foci (toxoplasma abscesses) in the brain, which can result in mental deficiency, epileptic fits or paralyzes, for example. It is typical of AIDS that harmless illnesses can no longer be cured. If an immune system is healthy, herpes (cold sores) for example, heal within several days. Not so if the immune system has been weakened: among such patients the sores can persist for months and small sores at the corners of the mouth can develop into deep ulcers.

## TREATMENT OF HIV-INFECTED PEOPLE

In recent years medical research has made great strides in developing therapy for HIV. It is now possible, with suitable forms of treatment, to delay the onset of AIDS, to prolong life, and to improve quality of life.

There is no cure yet; in other words, once infected with HIV, a person will always carry the virus and potentially infect others.

There are three distinct therapeutic approaches. The first is to inhibit replication of the virus in the body by use of antiviral drugs (antiviral therapy) and in this way to reduce the viral load and retard the destruction of the immune system. The second is to administer drugs to prevent diseases associated with AIDS, such as pneumonia with the parasite *Pneumocystis carinii*. The third is to ensure that diseases occurring due to immunodeficiency are successfully treated.

### Antiviral Therapy

Thanks to impressive progress in therapy, those living with HIV can benefit from antiviral drugs which

put a strong brake on the replication of the virus, so that the immune system can partially recover (cf. chapter: "Course of the Disease", p. 54). This therapy is begun wherever possible in the asymptomatic stage, and can delay the onset of AIDS by years. The right time to start it depends on the number of helper cells and of viruses circulating freely in the blood. This is why those who know their HIV status at an early stage can derive more benefit from these drugs.

Several classes of substance are now available, as for example the nucleoside analogue reverse transcriptase inhibitors, in use since 1987, the non-nucleoside reverse transcriptase inhibitors, and the protease inhibitors. Other drugs used inhibit the virus indirectly by stimulating the immune system.

Patients usually have to take a combination of three different drugs and adhere to a complex and extensive programme of medication, which, coupled with the severe side-effects, places them under considerable stress.

In addition to the sideeffects (redistribution of body fat, problems with metabolism of fat and sugar, osteoporosis, and others) a major problem in therapy is the development of resistant strains of the virus. Being highly mutable (cf. "HIV – the Pathogen of AIDS", p. 46 ff.) the virus often quickly manages to elude the inhibiting effect of the antiviral drugs, with the result that these become progressively weaker and the virus begins replicating again and destroying the immune system.

Owing to the development of resistance and to side effects, therapy often has to be changed several times, not always with success.

When HIV-infected persons receive antiviral therapy, the risk of their transmitting the disease is lowered, as the concentration of the virus in the blood and other body fluids is reduced.

AZT and other drugs that inhibit the virus also lower the risk of pregnant women with HIV from passing on the virus to the unborn child. Where there is no treatment during pregnancy, one child in four is infected with HIV, as compared to one in twelve when antiviral therapy is given.

Reverse transcriptase inhibitors include AZT (= Retrovirus®),

Lamivudin (= 3TC®), ddI (= Videx®) and ddC (= Hivid®) all of which are nucleoside analogue, while NVP (Viramune®) and EFV (Stocrin®) are non-nucleoside. The protease inhibitors include Indinavir (= Crixivan®) and Nelfinavir (= Viracept®).

### **Prevention of AIDS-Related Diseases**

The expected consequences of HIV infection in the AIDS stage can be prevented or at least delayed. This to some extent merely involves combating the symptoms. The HIV infection is never cured and the eventual destruction of the immune system cannot be prevented.

The precise approach to prevention of opportunistic infections (i.e. typical infections when the immune system is being destroyed) depends on the stage to which the disease has progressed. Normally a variety of drugs are used: e.g. Baktrim® to prevent *Pneumocystis carinii* pneumonia.

### **Therapy for Illness Associated with HIV**

As destruction of the immune system progress, opportunistic infections and malignant tumours occur and must be treated appropriately. For AIDS patients tuberculosis, pneumonia with normal pathogens, and other infections (influenza, etc.)

are life-threatening and have to be treated.

### **Rules of Conduct for those Infected with HIV**

A person infected with HIV can, however, avoid unnecessary strains on the immune system by following certain behaviour guidelines. A healthy lifestyle and mental well-being have a favourable influence on the course of the disease in general. This is also true of a balanced diet and moderate physical activity, but also the avoidance of extreme physical strain, such as running marathons, as well as abstinence from drugs and avoiding excessive alcohol and nicotine consumption. HIV-infected persons must wherever possible avoid contact with opportunistic pathogens. These are found, for example, in the excrement of pets, in soil and compost for house plants as well as in uncooked vegetarian food (e.g. in various unpasteurised dairy produce, in seafood).

In principle, other infectious diseases which put a great strain on the immune system should be avoided. When travelling it is advisable to choose areas which can offer good medical care and where the risk of infection with a tropical disease

(malaria) or other serious infectious diseases (typhoid, cholera) is as low as possible.

Medication should always be taken as instructed by the doctor. If psychological or social problems arise, whether related to HIV or to other factors, it is worth talking over these with a professional (such as a psychiatrist, family doctor, psychologist, or social worker).

### **Post-Exposure Prophylaxis**

Post-exposure prophylaxis (PEP) is an antiviral combination therapy administered for several weeks (usually 4 weeks) following a possible risk of infection. When health-care workers come into contact with blood (e.g. accidentally prick themselves with a needle contaminated with HIV-infected blood), this procedure is nowadays employed routinely, as it is known to reduce the risk of transmission by over two-thirds. For optimum effect, treatment must be started within one or two hours. It has severe side effects, and uncertainty remains as to its possible harmful long-term effects. Experimentally, PEP is administered after exposure to risk of sexual transmission (e.g. rape by an HIV-infected person). Therapy must begin no later than 72 hours after the

incident occurred. It is not yet known how many infections can be prevented in this way, and – in view of the health risks involved – nobody should be tempted into foolish sexual adventures in the vain hope of being given a “morning-after” pill.

### Vaccine

Throughout the world, enormous efforts are being made to develop a vaccine against HIV – all, however, unsuccessful thus far. The current state of knowledge tends to suggest it unlikely that a safe protective vaccine will be developed.

## CONTACT WITH HIV-INFECTED PEOPLE

The sick, and especially the seriously ill, such as those suffering from cancer or AIDS, rely on human relationships where they can find sympathetic understanding. It is an immense help for them to know they can depend on their family and friends who are always there for them, come what may, and who form a tight knit social net which will never let them down. Their parents, brothers, and sisters, and friends can show understanding and cheer them up even in difficult times. Moreover, they represent a link to the world outside, to their environment and to society. It is also important that these patients have access to optimal medical treatment and receive any necessary social and financial support.

People who are infected with HIV but who are not yet suffering from

any symptoms do not notice the infection at all. They can be treated in a natural, uncomplicated manner. It is an important moral support for a person infected with HIV to be unconditionally included in activities involving family and friends and to take part in social occasions and family gatherings.

The way people infected with HIV come to terms with it differs, as is the case with every difficult problem in life. Of course, it is a shock for anyone to learn of his or her infection with HIV. Most recover from this after several weeks or months. It is important for them to have friends who will listen patiently and empathetically, with whom they can discuss their worries and joys, as well as just chat about everyday life.

Some people infected with HIV, however, suffer a deep depression and feelings of hopelessness as a result of this stroke of fate, and are unable to find their way out without professional help. It is therefore important that, in addition to having human support, they should also be made aware of the need to consult a psychiatrist or a psychotherapist. People infected with HIV should never become resigned to depression, because they can be helped.

There are no risks of infection in everyday contact with people infected with HIV, e.g. at the workplace or on public transport – provided that no infected body fluid comes into contact with mucous membrane or damaged skin (cf. also explanations on pages 14 and

19). Living together with someone infected with HIV means never sharing objects used for personal hygiene such as toothbrushes and razors. When caring for AIDS patients, any direct contact with their body fluids should also be avoided, which means simply observing the usual rules of nursing hygiene.

No-one is in danger from an AIDS patient or a person infected with HIV in normal everyday life together. Rules of hygiene should be carefully observed, above all to protect the person infected with HIV whose weakened immune systems makes him susceptible to all kinds of infectious diseases. Every additional infection can further weaken the immune system and thus accelerate the illness.

## THE MAIN POINTS IN BRIEF:

### WHAT MUST I KNOW TO SAFEGUARD MYSELF FROM AIDS?

- **Risks of Infection**

**Primary routes of transmission:**

Sexual intercourse, sharing syringes, mothers infected with HIV infecting their children.

**Secondary routes of transmission:**

Oral sex, French kissing (deep kissing), occupational hazards.

**No transmission:**

In daily life, on public transport, at workplaces, while shopping, etc.

- **Relationship and Marriage**

An infection is impossible in a faithful relationship between two people where neither is infected with HIV.

- **Choosing a Partner Carefully**

I choose a partner for life who is suited to me and who is not infected with HIV.

- **Ruling out an Infection with HIV: the HIV Test**

I cannot normally tell if another person is infected with HIV simply by looking. The HIV test is the only way of finding out if that person is infected.

The test for HIV antibodies is one of the most reliable tests in medicine.

However, it can take two weeks up to three months after a possible infection before one knows whether one has become infected: in some 50% of all cases an infection could be detected after 3 weeks, and in 95% of the cases after 3 months.

- **The Condom**

The condom reduces the risk of an HIV transmission but does not rule it out with certainty.

- **Knowing about an Infection with HIV has two Important Advantages for those Concerned:**

I can behave in such a manner so as not to infect other

people, especially not my partner.

I can behave in such a manner so as to stay healthy for as long as possible and to be able to benefit from the latest and best medication and treatment.

Perhaps one day a cure will be found.

- **Drugs and Alcohol Encourage Recklessness**

Drugs and alcohol cloud common sense and lead to people having casual sexual contacts in which the danger of a transmission of HIV is great.

- **Injecting Drugs**

If I am addicted to drugs, I should start a course of drug rehabilitation therapy to get off the drugs. Only then can I be certain to avoid sharing needles.

AIDS  
INFORMATION SWITZERLAND 

P.O. Box 3176 • 8033 Zurich  
Tel. + 41 1 261 03 86 • Fax + 41 1 261 10 32 • PC 80-18122-3  
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