

# A I D S and HIV Infection

Information for  
United Nations  
Employees and  
their Families



World Health Organization  
Geneva, 1991

© World Health Organization 1991

This document is not issued to the general public, and all rights are reserved by the World Health Organization (WHO). The document may not be reviewed, abstracted, quoted, reproduced or translated, in part or in whole, without the prior written permission of WHO. No part of this document may be stored in a retrieval system or transmitted in any form or by any means – electronic, mechanical or other – without the prior written permission of WHO.

The views expressed in documents by named authors are solely the responsibility of those authors.

---

# Contents

<b>Note to the reader</b>	<b>vii</b>
<b>1. Basic facts about HIV infection and AIDS</b>	<b>1</b>
Discovery of the human immunodeficiency virus (HIV)	1
HIV infection and AIDS in adults	2
HIV infection and AIDS in infants and children	4
How HIV is transmitted	5
<b>Through sexual intercourse</b>	<b>5</b>
<i>The probability of HIV infection in the partner</i>	6
<i>The type of sex act</i>	7
<i>The amount of virus present in the infected partner</i>	7
<i>The presence of other sexually transmitted diseases in either partner</i>	8
<b>Through blood or blood products, or tissues</b>	<b>8</b>
<i>Through blood transfusions</i>	8
<i>Through use of non-sterile equipment</i>	10
<i>Through transplanted tissues and organs</i>	11
<b>From an HIV-infected woman to her fetus or infant</b>	<b>11</b>
How HIV is NOT transmitted	13
AIDS and the home	13
AIDS and work	13
AIDS and sports	15

---

<b>2. How to prevent transmission of HIV</b>	<b>17</b>
Sexual transmission of HIV	17
Factors influencing your risk of HIV infection	17
<i>The partners you choose</i>	17
<i>How many partners you have</i>	18
<i>The sexual behaviour you practise</i>	18
<i>The presence of other sexually transmitted diseases</i>	18
Avoiding sexual transmission of HIV	19
Transmission of HIV via blood and blood products	19
Types of risks	20
Avoiding bloodborne transmission where medical care is uncertain	23
<i>Medical emergencies</i>	24
Protecting children	26
<b>3. Should you be tested for HIV antibody?</b>	<b>27</b>
What the HIV antibody test can tell you	27
The HIV antibody test and employment	28
The HIV antibody test and pregnancy	30
<b>4. On learning that you are HIV-infected</b>	<b>31</b>
Coping with confirmed HIV infection	31
The impact on your health	32
The impact on your personal relationships	33
The impact on your work life	35

---

HIV and your infant's health	35
Having a healthy baby	35
Breast-feeding	36
Childhood immunizations	36
<b>5. The global pandemic and the global response</b>	<b>39</b>
HIV infection and AIDS worldwide	39
HIV-1	39
HIV-2	41
Trends in HIV infection and AIDS during the 1990s	42
What the United Nations system is doing about AIDS	43
<b>Conclusion</b>	<b>47</b>
<b>Glossary of technical terms</b>	<b>48</b>
<b>References</b>	<b>51</b>



---

# Note to the reader

This booklet summarizes the basic information now available on human immunodeficiency virus (HIV) infection and the acquired immunodeficiency syndrome (AIDS). It contains practical information to help United Nations employees protect themselves and their families against HIV infection, and provides advice and information for those who may already be infected.

The first section explains how HIV is and is not transmitted. In particular, it examines the risk of HIV transmission at home, at work, and in sports. It also explains what is known of the clinical course of HIV infection in adults and children in both developing and industrialized countries.

The second section contains specific practical advice to United Nations employees on how to protect themselves and their families from becoming infected with HIV.

The third section outlines the arguments for having an HIV antibody test and offers advice to those trying to decide whether or not to be tested.

The fourth section presents advice and information for those who are already HIV-infected. This section outlines the probable impact of HIV infection on health, personal relationships, decisions about pregnancy, and working life.

The last section describes the current scope of HIV infection and AIDS worldwide and summarizes anticipated trends in the years ahead. It then describes the response of the United Nations system to the pandemic and the role of the World Health Organization's Global

Programme on AIDS in leading and coordinating activities worldwide.

Readers are encouraged to consult the glossary (page 48) for definitions of any terms unfamiliar to them. References cited in this work are given on pages 51 to 54.

---

# 1. Basic facts about HIV infection and AIDS

## Discovery of the human immunodeficiency virus (HIV)

Widespread belief that infectious diseases were no longer a serious health threat in the industrialized world was undermined in the early 1980s by the emergence of a pattern of devastating, highly unusual infections in otherwise healthy young adults. This pattern, or syndrome, was caused by an unknown entity that apparently attacked the body's own defence system. It became known as the acquired immunodeficiency syndrome (AIDS).

During the period 1983-1984, researchers isolated a newly recognized virus, now known as the human immunodeficiency virus (HIV), and identified it as the cause of AIDS. This made possible a blood test for antibodies to the virus. It was determined that HIV is a member of the class of infectious agents known as retroviruses, common in animals but, until that point, rare in human beings.

It has been suggested that HIV may have been infecting some human populations relatively benignly for more than 20 years. In 1987, the World Health Assembly described HIV as a naturally occurring retrovirus of "undetermined geographical origin" (1).

A related virus, now called HIV-2, was first isolated in 1985, from persons with AIDS in Guinea-Bissau and

Cape Verde. On further investigation, the two viruses – HIV-1 and HIV-2 – were found to be similar: both of them infect the same kind of human blood cells, but their genetic material differs.

The pattern of illness associated with HIV-2 infection is similar to that in HIV-1 infection. Research suggests, however, that HIV-2 has a slightly longer mean incubation period.

## **HIV infection and AIDS in adults**

AIDS is the late stage of infection with HIV. HIV causes AIDS by attacking and destroying certain white blood cells that are essential for the body's immune defences. When HIV infects a cell, it combines with that cell's genetic material and may lie inactive for years. After a variable period of time, the virus becomes activated and then leads progressively to the serious infections and other conditions that characterize AIDS.

The main targets of the virus within the body are two groups of white blood cells called T4 (CD4+) lymphocytes and monocytes/macrophages. Normally, T4 cells and macrophages help recognize and destroy foreign entities, including disease agents. Whereas the T4 lymphocytes are killed by the virus, the macrophages act as reservoirs, carrying the virus to a number of vital organs.

HIV attaches itself to the T4 lymphocyte and makes its way inside, eventually causing the cell to produce more HIV but in doing so to be destroyed. As the body's T4 cell population is increasingly depleted by the virus, the immune system becomes less able to fight other infectious viral, parasitic, and bacterial agents present in the body. The infected person thus becomes susceptible to a wide range of so-called "opportunistic" infections, such as *Pneumocystis carinii* pneumonia, which

rarely occur in persons with normal immune systems. HIV-infected persons also become susceptible to otherwise rare cancers such as Kaposi sarcoma, a tumour of the walls of the blood vessels or the lymphatic vessels. In addition, at some point and in some persons, HIV may attack cells in the brain, causing neurological and psychiatric problems.

Persons infected with HIV are both infected and infective for life. Even when they look and feel healthy, they can transmit the virus to others.

The signs and symptoms of infection with HIV are varied and complex. They include those of opportunistic infections as well as those caused by HIV itself. Soon after becoming HIV-infected, some persons develop fever, enlarged lymph glands, skin rash, or cough. This early response to infection is often followed by a long symptom-free interval, which may last many years. As the immune system weakens, more signs and symptoms may develop. They include persistent diarrhoea, severe weight loss, fatigue, skin lesions, and loss of appetite. But these are common features of many other diseases as well. It is important to know that HIV infection can be confirmed only by a blood test.

According to the latest observations, 50% of HIV-infected persons are likely to develop AIDS within 10

**Expert comment**

**Delayed seroconversion**

The first appearance in the blood of antibodies to a particular foreign entity, or antigen, is called seroconversion. The interval between becoming infected with HIV and seroconversion usually ranges from 4 to 12 weeks. A few persons have no antibody response to the virus for as long as 6 months or more after becoming infected. Scientists currently believe that such a delay is rare.

years after first becoming infected. Fortunately, however, the survival time for persons diagnosed with AIDS or with early signs of AIDS (sometimes known as AIDS-related complex, or ARC) and who are treated early is being prolonged by the development of improved drugs for combating the common opportunistic infections and HIV itself. Whereas in 1982 a person with AIDS had only a 30% chance of surviving as long as 18 months after diagnosis, this has now increased to 60% in the industrialized countries where antiviral drugs and medicines for opportunistic infections are available.

Major international efforts are being made to develop safe, effective and affordable drugs and vaccines for the treatment and prevention of HIV infection and AIDS. For the moment, however, there is no known cure for HIV infection or AIDS, so that prevention of transmission remains the only method of control.

## **HIV infection and AIDS in infants and children**

Most HIV-infected infants and children have acquired the infection from their mother before, during, or shortly after birth. Only a small proportion are infected through HIV-contaminated blood transfusions or injections.

Paediatric AIDS is difficult to diagnose, for two reasons. One is that some symptoms of HIV infection, such as diarrhoea, are also common in infants and children who are not infected with HIV; therefore these symptoms cannot be considered a reliable basis for diagnosis. Another is that HIV blood tests are unreliable in infants because they cannot distinguish between the child's own antibodies and any maternal antibodies present in the child's blood. These maternal antibodies pass across the placenta from an HIV-infected mother to the fetus. They persist until the age

of 15-18 months in the bloodstream of both infected and uninfected children.

Much remains to be learned about the natural history and outcome of HIV infection in babies born with the disease. However, it is known that some infected infants die in their first year of life as a result of HIV-related diseases, while others experience a period without symptoms, followed by disease development. About 80% of infected infants develop AIDS by the time they are 5 years old. (For information about HIV and childhood immunizations, see page 36.)

## **How HIV is transmitted**

Epidemiological studies throughout the world have shown only three modes of HIV transmission. Sexual intercourse, whether heterosexual or homosexual, is the major route of transmission. Transmission also occurs through HIV-infected blood, blood products, or transplanted organs or tissues, for example by direct blood transfusion or through the use of improperly sterilized needles and syringes that have been in contact with infected blood. Finally, HIV can be transmitted from an HIV-infected woman to her fetus or infant before, during, or shortly after birth. (Factors influencing transmission risk, as well as recommendations on how to avoid transmission, are discussed in section 2, which starts on page 17.)

### **Through sexual intercourse**

HIV can be transmitted through unprotected sexual intercourse – that is, any penetrative sexual act in which a condom is not used. (For information on condoms as a means of reducing the risk of HIV transmission, see page 20.) Anal, vaginal, and oral intercourse with an HIV-infected person are all potential routes of transmission from an infected man to a woman or to another man, or from an infected woman to a man.

**How HIV enters the body**

**Blood and sexual secretions from an HIV-infected person are known to be capable of transmitting the virus to another person – provided they are given a portal of entry into his or her body.**

**This entry point can be:**

- **mucous membrane (the thin lining of the rectum, vagina, urethra, and mouth),**
- **skin anywhere on the body that has cuts, sores, abrasions, or other lesions, or**
- **the eye (see “AIDS and work”, page 13).**

**HIV does not penetrate intact skin.**

The risk of becoming infected through unprotected sexual intercourse depends on four main factors: (a) the likelihood that the sex partner is infected, (b) the type of sex act, (c) the amount of virus present in the blood or sexual secretions (semen, vaginal or cervical secretions) of the infected partner, and (d) the presence of other sexually transmitted diseases and/or genital lesions in either partner.

*The probability of HIV infection in the partner*

The prevalence of HIV infection among sexually active men and women varies according to geographical area and population subgroup (see “HIV infection and AIDS worldwide”, pages 39-43). The probability that a person has become infected with HIV sexually is, in general, proportional to the number of unprotected sex acts with casual partners that the person has engaged in in recent years.

### *The type of sex act*

All unprotected acts of sexual penetration (anal, vaginal, oral) carry a risk of HIV transmission because they bring sexual secretions directly into contact with exposed mucous membrane (the thin lining of the rectum, the vagina, the urethra, and the mouth). This risk is reduced, although not entirely eliminated, by the proper use of condoms.

Men and women who engage in unprotected receptive anal intercourse with an HIV-infected partner run the highest risk of becoming infected. The next highest risk is that associated with unprotected vaginal intercourse. Unprotected oral intercourse involves some risk of HIV transmission, but the available data are too limited to determine just how large the risk is.

Injury to the mucous membrane of the rectum or the vagina may help the virus to enter the bloodstream. However, HIV can be transmitted even through unbroken mucous membrane.

Saliva contains very little HIV, and kissing has not been shown to cause transmission. Nevertheless, while not substantiated, there is a theoretical risk of HIV transmission during deep or "wet" kissing (tongue kissing) if blood from gum or mouth sores is present in the saliva.

Self-masturbation involves no risk of HIV transmission. However, masturbation of a partner poses a theoretical risk of HIV transmission if his or her sexual secretions come into contact with mucous membrane or non-intact skin.

### *The amount of virus present in the infected partner*

HIV-infected individuals become more infective as they progress to HIV-related disease and AIDS. There

is also an early 1-2 week period of infectiousness around the time of seroconversion – that is, when antibodies first develop.

*The presence of other sexually transmitted diseases in either partner*

It is important to be aware that HIV can be transmitted sexually even when neither partner has another sexually transmitted disease. However, there is strong evidence that men and women with genital ulcer disease or other sexually transmitted diseases are at increased risk of acquiring and transmitting HIV. Diagnosis and treatment of these conditions may thus contribute to preventing the sexual transmission of HIV (2).

**Through blood or blood products, or tissues**

*Through blood transfusions*

In most industrialized countries, the risk of acquiring HIV infection from blood transfusion is about 1 in 100 000 (0.001%) for each unit of blood transfused; the risk increases with each unit received. This low risk is the consequence of effective recruitment of voluntary, non-remunerated, regular blood donors; improved donor testing procedures; universal screening of blood and blood products with highly sensitive and specific tests for the antibody to HIV; and the appropriate use of blood, with increased reliance on autologous (self-donated) blood, where feasible.

Transmission of HIV through blood transfusion continues to be a health problem in many developing countries. For example, it is estimated that in sub-Saharan Africa only 50–60% of the blood transfused annually is tested for HIV before transfusion. HIV seroprevalence is very high in some parts of Africa, and

it is known that many patients receive HIV-infected blood. As a result, an estimated 5–10% of HIV infections in high-prevalence areas are caused by HIV-contaminated transfusions. The lack of coordinated national blood transfusion systems, the absence of a stable group of volunteer blood donors, and the inappropriate use of blood products compound the problem.

The Global Blood Safety Initiative was launched in 1988 to help countries strengthen their blood transfusion systems. Participating in this initiative are the Global Programme on AIDS and the Health Laboratory Technology and Blood Safety unit of the World Health Organization, the United Nations Development Programme, the League of Red Cross and Red Crescent Societies, and several other interested organizations. Guidelines have been produced on developing a volunteer blood donor base, on the appropriate use of blood and the use of substitutes for blood, and on the minimum essentials for a blood transfusion service, and strategies have been devised to reduce the transmission of HIV by blood transfusion (3-8). Training programmes have been held and will continue on an accelerated schedule. Expert consultants in blood transfusion have visited many countries and have made available HIV screening facilities in nearly all large cities, where the majority of transfusions take place. In some developing countries all blood donations are now being screened for HIV as part of the national AIDS control programme.

A major goal of the Initiative is to test all blood wherever HIV is widely prevalent. Simple and inexpensive procedures, such as some of the “rapid” tests, are appropriate for many areas. Blood screening must be done as part of a fully developed blood transfusion system, however, if blood safety is to be maintained.

*Through use of non-sterile equipment*

HIV can be transmitted through the use of HIV-contaminated needles or other invasive instruments.

The sharing of syringes and needles by injecting drug users is responsible for the very rapid rise in HIV infection rates among these persons.

**Expert comment****Epidemiology of HIV and nonmedical drug injecting**

Drug injecting represents one of the most important routes of HIV transmission in industrialized countries. HIV prevalence is high among drug injectors in many European and North American cities. In Milan and Cagliari, Italy; Edinburgh, Scotland; Barcelona, Spain; and New York City, USA, as many as half of the drug injectors are HIV-infected.

The problem is also growing in some South American and Asian cities. In some areas of Brazil, over 40% of drug injectors tested in 1989 were HIV-infected. In Thailand's capital, Bangkok, seroprevalence in a group of such drug users rose from less than 1% in late 1987 to 20% in mid-1988 and to almost 60% by late 1990.

Unprotected sexual relations can be the route of HIV transmission from infected drug injectors to their sex partners. Prostitution is not uncommon among both female and male drug users, and regular condom use is rare. As a result, HIV can spread easily within and outside the sexually active drug-user population.

A significant risk is attached to nonmedical skin-piercing procedures if the instruments used are not properly sterilized. Such procedures include ear-piercing and tattooing, as well as male and female circumcision and traditional scarification.

HIV transmission by means of injection equipment can also occur in health care settings where syringes,

needles, and other such instruments are not properly sterilized (see pages 21 and 23).

### *Through transplanted tissues and organs*

Sperm donated by an HIV-infected man can cause infection in the woman recipient of artificial insemination.

The HIV-infection status of all persons who donate tissues and organs needs careful scrutiny to prevent transmission by this route.

### **From an HIV-infected woman to her fetus or infant**

A pregnant woman infected with HIV has an approximately 30% chance of passing the virus to her fetus or newborn baby. Little is known about the precise mechanism or timing of transmission. There is evidence that infection can occur as early as the first 12-15 weeks of gestation, but what proportion of fetuses are infected this early and what proportion become infected later *in utero* or during the birth process is unknown.

Reports of women who became infected with HIV after giving birth and whose infants subsequently became infected show that the virus can be transmitted through breast-feeding. Such reports have been rare, however. The risk from breast-feeding for a child born to a seropositive mother appears to be comparatively low, and should be weighed against the benefits that breast-feeding offers (see page 36) (9).

Studies of virus transmission to infants are complicated by the lack of a reliable diagnostic test to determine whether the infant is actually infected, as mentioned above (page 4). Developing a reliable method of early diagnosis continues to be a high priority, and a number of promising experimental tests are currently being investigated.

It is estimated that as of mid-1991 at least 3 million women around the world have become infected with HIV. Most of them are in sub-Saharan Africa. Serosurveys of pregnant women have documented levels of HIV infection ranging from zero in some areas to over 30% in parts of urban central Africa. Using findings from seroprevalence studies of pregnant women in Africa, WHO estimates that, in sub-Saharan Africa alone, the cumulative number of HIV-infected children below the age of 5 years is about 900 000 as of early 1991.

**Expert comment****Transmission of HIV from an infected woman to her fetus or infant**

In a 15-month follow-up study of 100 infants born to HIV-infected mothers in six European countries, 25% were found to be HIV-infected. This compares with a 25–50% infection rate for a similar number of infants born to HIV-infected mothers and periodically checked for 12 months after birth at two different centres in Kinshasa, Zaire.

Most mothers in the European study had a history of injecting drug use, and for two-thirds of the women it was their first child. Only 5% of these mothers, however, had AIDS or ARC before delivery. In the Kinshasa study, 29% of the HIV-infected mothers had AIDS, and for most of the women this pregnancy was their second or third.

Among HIV-infected women in the Kinshasa study, those most advanced in the course of their HIV infection appeared to be the most infective to their babies. They were also more likely to experience premature delivery and to have babies of low birth weight.

## How HIV is NOT transmitted

HIV is not transmitted by casual person-to-person contact at home, at work, or socially. For example:

- HIV is not transmitted through physical contact (such as hugging, cuddling, or caressing) that does not give an entry point to sexual secretions. (See “How HIV enters the body”, page 6.)
- HIV is not transmitted by handling or hugging an HIV-infected baby or playing with an infected child.
- HIV is not transmitted by giving blood, so long as sterile procedures are used.
- HIV is not transmitted by mosquitos or other insects.
- HIV is not transmitted by breathing, coughing, sneezing, or spitting, or through tears or perspiration.

## AIDS and the home

HIV is not transmitted via ordinary personal contact in the home, such as by sharing food, eating or drinking utensils, bedding, toilet facilities, or bath water. So, for example, food prepared by an HIV-infected household helper or family member poses no risk to other members of the household. For the same reason, most HIV-infected persons who become ill but do not need hospitalization can safely be cared for at home (10).

## AIDS and work

In the vast majority of occupations and occupational settings, work does not involve a risk of acquiring HIV. The exceptions include laboratory workers,

health care workers, personnel dealing with hospital waste products, emergency medical response personnel, and any other occupation where there is a possibility of exposure to blood. Their risk is very low but real. Among the hazards to which these workers may be exposed are needlestick injuries and other skin-piercing accidents, and blood splashing into the eye while they are administering treatment or otherwise pursuing their duties (see pages 21 and 22).

**Expert comment****WHO guidelines on AIDS and first aid in the workplace**

Two major areas of concern to first aiders are mouth-to-mouth resuscitation and the control of bleeding. In both these situations, first aiders may come into contact with the body fluids of another person (17).

- Mouth-to-mouth resuscitation is a life-saving procedure and should not be withheld because of an unsubstantiated fear of contracting HIV or other infection.

No case of HIV transmission via this route has been reported. Although HIV has been isolated from saliva under laboratory conditions, there is no documented case of virus having been transmitted via saliva. A theoretical risk of transmission exists if the person in need of resuscitation is bleeding from the mouth. In this case first aiders should use a clean cloth to wipe away any blood from the person's mouth.

- A person who is bleeding needs immediate attention.

Pressure should be applied to the wound with a clean thick cloth. Special care should be taken to avoid blood contact with broken skin or the eyes or mouth of the first aider.

First aiders should ensure that any open cuts or wounds they have are covered before they start giving first aid. Hands should always be washed with soap and water as soon as possible after giving aid.

## AIDS and sports

There is no evidence that any person participating in any sports activity, whether it be swimming or a contact sport such as rugby, either has become infected with HIV or has transmitted the virus to fellow participants (12).

It is theoretically possible that virus transmission could occur if an HIV-infected athlete had a bleeding wound or skin lesion with fluids that came into contact with another athlete's skin lesion, cut, or exposed mucous membrane. Even in such an unlikely event, however, the risk of transmission would be very low.

Given this theoretical possibility, it is sensible in sports involving direct body contact or combative sports where bleeding might be expected to occur, such as boxing, to follow two simple procedures:

- 1) Cleanse any skin lesion with antiseptic and cover it securely.
- 2) If a bleeding injury occurs, interrupt participation until the bleeding has stopped and the wound has been both cleansed with antiseptic and securely covered.



---

# 2. How to prevent transmission of HIV

## Sexual transmission of HIV

Whether you are a man or a woman, heterosexual, bisexual, or homosexual, you can become infected with HIV through the sexual secretions of an HIV-infected partner, especially if you engage in unprotected sex (13).

### **Factors influencing your risk of HIV infection**

#### *The partners you choose*

Your risk of acquiring HIV infection is directly related to the likelihood that your partner is infected. The probability that you will encounter an HIV-infected partner varies according to geographical area and to population subgroup, with the frequency of HIV infection ranging from very low to very high. These variations are explained on pages 39 to 43.

Bearing these variations in mind, you should be aware that the risk that your partner is infected, and could therefore infect you, is increased if he or she:

- has ever injected drugs,
- has unprotected sex with other persons, and particularly with casual acquaintances,
- has a sexual history that is unknown to you.

Above all, be aware that it is impossible to detect someone's HIV-infection status simply from his or her physical appearance. Individuals who look perfectly clean and healthy may well be infected – even if they are unaware of it themselves – and hence capable of infecting you.

### *How many partners you have*

The greater the number of sex partners you have, the greater the likelihood that you will encounter a partner with HIV infection.

### *The sexual behaviour you practise*

All forms of penetrative sexual intercourse with an HIV-infected man or woman carry a risk of HIV transmission, although the risk is diminished when a condom is used properly (see box, page 20). There are, however, broad differences in the relative risk of acquiring HIV infection through various forms of sex. Anal intercourse is one of the riskiest practices. This is true even when a condom is used, because of the increased likelihood that the condom will be damaged during this form of sex. Vaginal intercourse carries a lower risk than anal intercourse. Little is known about the risks associated with oral intercourse.

### *The presence of other sexually transmitted diseases*

There is strong evidence that men and women with genital ulcers or other sexually transmitted diseases are at greater risk of acquiring and transmitting HIV. It is thus important to treat sexually transmitted diseases promptly. Unfortunately, such conditions frequently cause no symptoms, particularly in women, who for that reason may be unaware that they are affected. If you suspect you may have acquired or been exposed to a sexually transmitted disease, you should seek medical advice.

The proper and consistent use of a condom greatly diminishes the risk of acquiring or transmitting all sexually transmitted diseases, including HIV infection.

### **Avoiding sexual transmission of HIV**

If you and your sex partner are HIV-seronegative and do not engage in sex with others, inject drugs, share needles, or receive transfusions of infected blood – and have never done so – you are not at risk of HIV infection. However, it is obviously difficult, if not impossible, to be certain about all of your own and your partner's personal contacts and activities, even in a long-term relationship.

If you are unsure about these factors in either yourself or your partner, it is important for both of you to discuss the need to practise safer sex. If you decide always to use a condom during vaginal or oral intercourse, this will reduce the risk of HIV transmission (13). (The use of a condom during anal intercourse will also diminish your risk, although this is still one of the riskiest practices, owing to the likelihood of condom damage.)

Or, to be even safer, you can engage in sexual practices that involve no penetration. Such practices include caressing or massaging any part of the body, masturbation (provided that sexual secretions do not come into contact with exposed mucous membrane or with cuts or sores on the other partner's skin), and kissing that does not involve heavy exchange of saliva and possibly blood. The safest course of all is to abstain from sex.

## **Transmission of HIV via blood and blood products**

Your risk of acquiring HIV infection through blood or blood products is influenced by the prevalence of

the virus in your geographical area (see pages 39 to 43) and the precautions you take.

#### **What you need to know about condoms and spermicides**

**Latex condoms lubricated with silicone or a water-based lubricant are recommended as a barrier method to reduce the risk of HIV transmission. (If additional lubricant is desired, a water-based, not an oil-based, lubricant should be used.) Latex condoms are effective in preventing HIV transmission if they are used properly and do not break.**

**The use of natural membrane condoms, often made from sheep gut, is not recommended because they have tiny pores through which HIV may pass.**

**For maximum effectiveness in preventing HIV transmission, the condom must be put on (using a new one each time) before the penis touches any part of the rectum, vagina, or mouth. It should be put on when the penis is erect. Care should be taken during withdrawal of the penis (with the condom still in place) to avoid spillage. Used condoms should be disposed of in normal rubbish receptacles (not in flush toilets, as they may block the pipes). Safe, acceptable, and effective condoms for women – essentially liners for the vagina – are now being developed. A model made of polyurethane is likely to be on the market in 1991, initially in Western Europe and the USA.**

**Spermicides containing nonoxynol-9, menfegol, and benzalkonium chloride are currently being studied to determine what role they might play in prevention. They have not yet been shown to prevent the sexual transmission of HIV and should not be used for this purpose.**

### **Types of risks**

Sharing needles and syringes to inject drugs for nonmedical purposes is one well-documented way of acquiring HIV. The risk of becoming infected through

drug use with shared needles and syringes differs from region to region. However, the transmission of HIV through drug injecting is spreading fast in many parts of the world (see pages 10 and 40–41).

The risk of becoming infected through a blood transfusion also varies according to where you are. Even the most reliable blood screening system cannot be 100% effective in identifying blood donated by infected donors, simply because of the length of time between acquisition of infection and appearance of laboratory evidence of infection (usually 4-12 weeks). In most industrialized countries, the risk of acquiring HIV infection from blood transfusion is about 1 in 100 000 (0.001%) for each unit of blood transfused. Where the blood transfusion system is not in place and testing is not reliable, the risk of receiving HIV-contaminated blood may be as high as 1 in 10 (10%), and even higher in some areas (see pages 8 and 9).

The risk of acquiring the virus through an unsterilized needle or other skin-piercing instrument depends on the local prevalence of HIV infection. Cosmetic and other procedures that involve piercing the skin pose a risk when carried out with unsterilized instruments outside the health care system. Such procedures include injections, dental treatment, acupuncture, tattooing, and ear-piercing. It may also be risky to be shaved by a barber using a razor blade or a straight razor that has not been sterilized.

In the health care setting, HIV infection can theoretically be transmitted through unsterilized needles and skin-piercing instruments from patient to patient, from patient to health care worker, and from health care worker to patient. Because HIV is an unstable virus and is present in low concentrations in blood (see box), transmission by any of these three pathways is rare, the last being the rarest of all. For example, evidence from the USA indicates that health care workers who accidentally puncture their skin with a needle

contaminated with blood from an HIV-infected patient have an estimated 13-in-10 000 (0.13%) risk of developing HIV infection. By way of comparison, the risk of developing hepatitis from a similar skin-piercing injury can be up to 2000 times higher.

**Expert comment****The stability of HIV outside the body**

Several factors determine how long a virus can live outside the body and how long it remains infectious. Some viruses, such as the hepatitis B virus, can remain infectious in dried blood on a laboratory workbench for up to 48 hours after being spilt. Fortunately, HIV is a very fragile virus, vulnerable to changes in temperature and other environmental factors, and has not been shown to remain viable in dried blood for more than 1 hour.

In addition, in contrast to many other viruses, the concentration of virus particles of HIV is very low, even when the blood is taken from persons in the peak phases of viraemia (that is, during their most infective periods). While for many viral diseases between 100 000 and 1 million virus particles are present per millilitre of blood, in the case of HIV only 1000–10 000 particles are present during peak viraemia. This low concentration of HIV explains why it is not easy to detect the virus in the blood of an HIV-infected person, even under the best laboratory conditions, and why HIV tests are usually based on finding antibodies to the virus rather than the virus itself.

Despite the low level of occupational risk posed by this unstable virus, the consequences of infection with HIV should not be underrated, and safe work practices should be followed at all times by laboratory personnel and health workers caring for persons with AIDS.

Nevertheless, because there is currently no cure for HIV infection or AIDS, every effort must be made by

health care workers to prevent even rare instances of transmission in the health care setting. They can best do this by following good hygiene practices and sterilization guidelines in line with the concept of “universal blood precautions”, i.e. by treating *all* blood as if it were infectious. WHO has recently issued guidance on this subject (14).

### **Avoiding bloodborne transmission where medical care is uncertain**

When living or travelling in areas where the level of medical care is uncertain, you should take special precautions to avoid HIV transmission via blood. If a medical kit is provided by the medical service of your agency, use it. The WHO medical kit contains a brochure on AIDS (15) and disposable syringes and needles in case staff members need to have blood taken or receive an injection or vaccination while travelling. Remember always to carry a doctor’s certificate when taking needles and syringes abroad, in order to satisfy customs officials that they are for medical use.

If you carry your own needles and syringes, make sure they are the ones used on you. If you are not carrying your own needles and syringes, avoid having injections unless they are absolutely necessary. In the case of disposables, make sure you observe the disposable needle and syringe being removed from their sterile container.

Avoid tattooing and ear-piercing. Avoid any procedures that pierce the skin, such as acupuncture and dental work, unless they are genuinely necessary. Before submitting to any treatment that may give an entry point to HIV, ask whether the instruments to be used have been properly sterilized. HIV is very sensitive to heat. Medical and dental instruments should be sterilized by steam or by dry heat. If sterilization by heat is not possible, the instruments should be disinfected by boiling (10).

**Expert comment****Injections and other skin-piercing medical procedures**

In order to minimize HIV transmission, injections and other skin-piercing procedures should be performed only when necessary and only after consideration of the risks and benefits of available options. Where there is an appropriate and acceptable alternative, such as administering a medication by mouth, it should be used (16).

When an injection is necessary, the proper procedures should be followed scrupulously. A single-use (disposable) instrument should be used only once. Then it should be destroyed under the supervision of health care staff to prevent its reuse. Multiple-use instruments should always be washed and appropriately sterilized or disinfected according to existing guidelines (10, 17).

*Medical emergencies*

Before travelling, especially to areas where the level of medical care is uncertain, establish a plan for dealing with medical emergencies (18):

- Identify sources of reliable medical help.
- Carry sterile injection equipment.
- Be aware of emergency evacuation procedures.

Whether you are at home or travelling abroad, the basic rule is to lower your potential need for blood transfusions by reducing your risk of serious injury. Do this by taking ordinary, common-sense precautions. In an automobile, wear a seat-belt and drive carefully. When impaired by alcohol or other substances, do not drive, operate a boat, or engage in other activities that could easily lead to injury. Avoid risky means of transport. Be careful to avoid the common causes of accidents in the home, such as fires, falls from ladders, and cuts from kitchen knives.

If despite all precautions you are injured and lose blood, recourse to blood transfusions should not be the first consideration. There are three reasons for this: (i) replacing the volume of blood lost with a plasma substitute is more urgent than replacing red blood cells; (ii) blood transfusion involves delays for blood-typing and cross-matching; and (iii) blood transfusion poses unavoidable risks.

Alternatives to blood transfusion exist if blood loss is limited. An acute loss of 20% of blood volume can generally be tolerated by healthy adults. A loss of more than 20% requires volume replacement. Plasma substitutes can be used instead of blood to replace volume and do not involve the risks of disease transmission associated with blood transfusion (6, 19). The United Nations Joint Medical Service has always recommended the use of plasma substitutes. Plasma substitutes have been supplied to all United Nations Dispensaries during the past years and should also be easily obtainable from pharmacies/chemists in large cities.

More than 30% volume loss may lead to shock. This requires volume replacement with a plasma substitute; it may also require blood transfusion.

When severe and acute haemorrhage has occurred and blood transfusion is necessary, the minimum volume of red blood cells needed to sustain life should be transfused. Efforts should be made to ensure that the blood has been screened for HIV and hepatitis virus. Emergency medical evacuation should be considered.

It is very important to support the development within countries of safe and adequate blood supplies by donating blood regularly and encouraging others who are not at risk to donate blood.

## Protecting children

Parents should make sure that children know the facts about HIV transmission and how they can protect themselves against becoming infected. Specifically, parents should make sure their children:

- are aware that HIV can be transmitted through blood;
- are warned to avoid any skin-piercing procedures or accidental injury from unsterilized needles or other sharp instruments;
- wear seat-belts in cars, and preferably sit in back;
- receive injections or other medical or dental treatment only when necessary and only with properly sterilized equipment;
- receive blood transfusions only when medically necessary and only with properly screened blood.

Older children need information and encouragement that will help them avoid becoming infected through unprotected sexual intercourse or through sharing drug-injecting equipment.

Children also need to be reassured about the ways in which HIV *cannot* be transmitted (see page 13). They should be encouraged to be sympathetic towards children and adults who are infected.

---

# 3. Should you be tested for HIV antibody?

## What the HIV antibody test can tell you

The standard tests to determine whether individuals are HIV-infected are based on the detection of antibodies to HIV in the blood serum, not of the virus itself (13). Enzyme-linked immunosorbent assay (ELISA), immunofluorescent assay, and Western blot analysis are among the most common techniques used. When correctly performed, such tests are very accurate. A positive test means that antibody has been detected and the person is HIV-infected; a negative test means that no antibody has been detected, hence the person is not infected.

Tests for HIV infection are not perfect, however. Not all HIV-infected persons will have a positive test. In particular, persons newly infected with HIV are likely to have a false-negative test during the first 4-12 weeks following infection. In a very few cases the appearance of antibody has been delayed for 6 months or more.

HIV tests can also yield false-positive results, in which a person's blood reacts positively to the test even though the person is not infected. Relying on a single such test result could lead to confusion and personal distress, as well as to practical problems with such matters as life insurance and health insurance coverage. For this reason, if an ELISA test, for example, gives a positive result, an immunofluorescent assay or a Western blot analysis is usually performed to provide confirmation.

The HIV antibody test is a test for HIV infection, not AIDS. Based on current understanding, all persons with HIV infection will eventually develop AIDS unless they die of other causes first. However, the antibody test cannot predict when AIDS will occur, nor can it indicate how long a person has been infected.

If you are worried that you may have been exposed to HIV, you may wish to consider being tested for HIV antibody. You should always seek counselling before you decide whether or not to have the HIV test (20). Counselling will give you more information about the test procedure and about the many factors involved in testing of which you may be unaware – including emotional, social and legal repercussions, regardless of whether the test result is negative or positive. New medications that can enhance and prolong the well-being of HIV-infected persons and slow their progression to AIDS are continually being developed. You can benefit from these medications and other care only if you know, from having been tested, that you are HIV-positive.

## **The HIV antibody test and employment**

In the vast majority of occupations and occupational settings, as explained on pages 13 and 14, work does not involve a risk of transmitting HIV between workers or from worker to client. The following recommendations have been put forward on AIDS and the workplace:

- Pre-employment HIV/AIDS testing as part of assessing fitness to work is unnecessary and should NOT be required. This applies to both direct methods such as HIV testing and indirect assessment of risk behaviours and questioning the applicant about HIV tests already taken. Pre-employment

HIV/AIDS screening for insurance or other purposes raises serious concerns about discrimination and merits close scrutiny.

- For persons currently employed, HIV/AIDS screening, whether direct or indirect, should NOT be required.
- All medical information, including HIV/AIDS status, must be kept confidential.
- Employees should not be obliged to inform the employer regarding their HIV/AIDS status.
- Persons in the workplace who are infected (or perceived to be infected) by HIV must be protected from stigmatization and discrimination by co-workers, unions, employers, and clients. Information and education are essential to maintain the climate of mutual understanding necessary to ensure this protection.
- HIV-infected employees should not be discriminated against, among other things with respect to their access to and receipt of benefits from statutory social security programmes and occupationally related schemes.
- HIV infection alone does not limit fitness to work. If fitness to work is impaired by HIV-related illness, reasonable alternative working arrangements should be made.
- HIV infection is not a cause for termination of employment. As with many other illnesses, persons with HIV-related illnesses should be allowed to work so long as they are medically fit for available, appropriate work (21).

At work as elsewhere, HIV-infected persons have a responsibility to adopt behaviour that does not put others at risk of infection.

## **The HIV antibody test and pregnancy**

Whether you are a man or a woman, if you are worried that previous high-risk behaviour may have exposed you or your partner to the virus and you are thinking about having a baby, the HIV antibody test may help clarify your choices. Testing should be available, with pre- and post-test counselling, on a voluntary, confidential basis. You and your sex partner should be counselled on the implications of a positive test result for both of you and for the fetus or infant if pregnancy is considered, and – where abortion is legal – you should be counselled on the options of continuing or terminating the pregnancy.

The more advanced the course of their infection, the more likely it is that HIV-infected pregnant women will transmit the virus to their babies. Thus, the risk of transmission ranges from low (if the HIV-infected woman has no signs and symptoms) to high (if she has AIDS). Overall, among women at various stages of infection, the transmission rate is about 30%.

Pregnancy does not appear to accelerate the progression of the clinical course of HIV infection.

---

# 4. On learning that you are HIV-infected

## **Coping with confirmed HIV infection**

As with news of any other life-threatening condition, learning that you are infected with HIV can be very distressing. Your degree of distress depends on how well prepared you are for the news; how well supported you are by family and friends; your physical health at the time; and your cultural, religious, and spiritual attitudes towards illness and death.

Your need for counselling and support is likely to be great. No matter how reassuring the doctor, how effective drug therapies are now and will become, how minimal the physical impact of the infection, or how intellectually prepared you may be, news of infection or disease will have an enormous impact.

The psychological issues faced by most persons with HIV infection or disease revolve around uncertainty and the need for adjustment. Uncertainty emerges with regard to hopes and expectations about life in general, but may focus on family and job. In response to this uncertainty and to possible feelings of fear, loss, grief, guilt, depression, denial, or anxiety, the person infected with HIV must make a variety of adjustments.

## The impact on your health

This is likely to depend on the stage of infection you have reached when you discover that you are HIV-infected, the psychological support available to you, and your access to good medical care.

Soon after becoming infected with the virus (usually before or at the time of seroconversion), some persons experience a brief flu-like illness with fever, swollen lymph glands, skin rash, or cough. You may then remain perfectly fit and healthy for many years despite being infected with the virus. For approximately 50% of infected persons, the time between becoming infected and the appearance of the opportunistic infections that characterize AIDS is more than 10 years.

Zidovudine (also known as AZT), while expensive, has been shown to slow the onset of AIDS, and other drugs that suppress HIV are currently under development. Your quality of life will also be improved by the preventive and therapeutic use of drugs that fight off common opportunistic infections and other diseases to which HIV-infected persons are prone, such as tuberculosis. While there is as yet no cure for AIDS, researchers around the world are working hard to develop new and better drugs to slow the progression of disease, and they are optimistic that improved treatment strategies will be found.

In addition to good medical care, you will benefit greatly from psychological support from family and friends and from counselling, as described above. In many countries, moreover, seropositive people have formed mutual support groups, which can offer you invaluable advice and help.

## **The impact on your personal relationships**

Partners are likely to suffer the consequences of HIV infection/disease just as much as, if not more than, the infected person, albeit indirectly. This is so even if the partners know that they are not HIV-infected themselves. Their lives are likely to be subject to the same types of pressures and upheavals, and they can experience similar feelings of uncertainty, grief, loss, and anger. Caregivers often suffer higher levels of depression and psychological difficulty than are experienced by the HIV-infected persons themselves.

Communication between the two partners and between partners and counsellors is important to foster understanding of the adjustments that will be needed, for example, in sexual behaviour, so as to guarantee that no further transmission of infection will occur; to clarify any fears that might remain about the transmissibility of HIV; and to inform the partner about the physical, psychological, and emotional changes and needs that the person with HIV infection is experiencing.

A person with HIV infection has the opportunity to make others more aware of the disease and to strive to decrease misunderstanding and prejudice with respect to persons with HIV infection and AIDS. You should nevertheless consider carefully your choices about revealing your HIV status, since misunderstanding and discrimination do exist and unpleasantness from these may affect you and those you love.

In many situations, families are the main source of care and support for HIV-infected persons, and the type of care required may change depending on the stage of the infection. The need for counselling for family members, addressing the needs of individuals and of the family as a unit, is likely to increase markedly as the disease progresses.

**Illustrative case**    **Family stress after a positive HIV antibody test result**

*Emily, a lawyer employed by a specialized agency of the United Nations system, and her husband, John, a mining engineer, were stunned when blood tests showed he was HIV-positive. He had not been well for several months, but they had thought he was just run-down from the demands of his job; their physician had suggested the HIV antibody test, among others, "just to be thorough". In their dismay, they realized what must have happened: three years before, John had suffered internal injuries in an automobile accident while on a working trip abroad. During surgery, he had received a blood transfusion: it must have been HIV-contaminated.*

*For a few weeks both Emily and John coped well despite their shock. They agreed to keep his condition to themselves in order to avoid hurtful gossip, and decided not to tell their two young children, but the worry and increasing tide of pessimistic press coverage about AIDS took their toll. Emily began to have trouble sleeping and to lose weight because of concern about the family's future and anxiety that she, too, might be HIV-infected. Though she was deeply sorry for John, she also could not help blaming him, in part, for the problems the family now faced. She felt guilty because she knew this blame was unfair, and angry at feeling guilty. It was clear that Emily and her husband were heading for a separation neither of them wanted. Eventually she agreed to join John for counselling.*

*One of the most important outcomes of seeking advice was that they both agreed that others should be made aware that John was ill, although they did not want even close friends to know the diagnosis. After settling on "leukaemia" as the culprit, they were able to share their distress with trusted friends, who quickly sprang to their aid. Emily was tested for HIV antibody at intervals of several months and was found to be uninfected, probably because she and John had been using condoms for family planning ever since the birth of their younger child, four years earlier. Eventually the children were told that their father was seriously ill, and the family was restored and reunited in trying to enjoy what they could as a group and plan together for the future.*

## **The impact on your work life**

Again, this is likely to depend on how you feel physically and mentally and at what stage your infection is discovered. Experience has shown that persons with HIV infection, with or without symptoms, should keep working as long as possible. After the initial period of coming to terms with the infection, for most people there will come a time for getting on with their life – for starting to live with HIV/AIDS. Work may be an important part of this.

Although you are not obliged to inform your employer and colleagues of your HIV status, certain circumstances may make it necessary to do so. If your job calls for you to travel, for example, you may need to go to countries where a certificate that you have no evidence of HIV infection is required for entry. In addition, you may require vaccinations. Theoretically, you could become infected by the “live” but attenuated (weakened) pathogens in certain vaccines, particularly if your immune system has already been damaged by HIV. You should consult your physician to determine whether the risk involved in vaccination outweighs the threat posed by the disease, and if alternatives to vaccination exist. A decision not to travel, or to take precautions other than vaccination (in which case you may need a medical certificate to enter countries where vaccination is required by law), may leave you with no choice but to inform your employer.

## **HIV and your infant’s health**

### **Having a healthy baby**

Pregnancy is something you and your partner will need to discuss very carefully with your physician/counsellor if either or both of you are infected. See “The HIV antibody test and pregnancy”, page 30.

## **Breast-feeding**

The immunological, nutritional, psychosocial, and child-spacing benefits of breast-feeding are well recognized. Breast milk is also important in preventing infections that could accelerate the progression of HIV-related disease in already infected infants. Breast-feeding should continue to be promoted, supported, and protected in both industrialized and developing countries.

Current information suggests that the risk of HIV transmission to the infant from an infected mother through breast-feeding is low. Furthermore, in many settings the risk of infant mortality from other causes that would result from *not* breast-feeding is much greater than the possible additional risk from HIV.

The risk of transmission – while still low – is highest for women who develop clinical AIDS after delivery or who become HIV-infected during or after giving birth (which can be ascertained only by HIV testing both before and after delivery).

A woman who knows or suspects she is infected will therefore need to weigh carefully the benefits of breast-feeding against the low but real risk of transmitting HIV to her baby. She should consider alternative modes of infant feeding, including banked breast milk, wet-nursing, or breast-milk substitutes, when these are safe, available, and affordable. In other circumstances, however, and particularly where the safe and effective use of alternatives is not possible, breast-feeding by the biological mother should continue to be the feeding method of choice (9, 10).

## **Childhood immunizations**

In response to worries that HIV-infected children might be adversely affected by routine childhood immunizations, WHO and the United Nations Children's Fund (UNICEF) have concluded that virtually all

children should receive the standard immunizations against diphtheria, tetanus, pertussis, measles, poliomyelitis, and tuberculosis. The *only* exception is BCG immunization against tuberculosis for HIV-infected children who are symptomatic (see box).

**Expert Comment****HIV and routine childhood immunization**

Children – including HIV-infected children – should be immunized against diphtheria, tetanus, and pertussis (with DTP); poliomyelitis (with OPV or IPV); and measles (with measles vaccine), according to standard schedules. Children with known or suspected HIV infection are at increased risk of severe measles, and these children should be given measles vaccine as early as possible. Parents of HIV-infected children may be HIV-infected themselves and have a higher incidence of tuberculosis than the general population. Early protection against tuberculosis with BCG immunization is therefore recommended for HIV-infected children who are not symptomatic. Symptomatic HIV-infected children, however, should *not* be immunized with BCG (22).



---

# 5. The global pandemic and the global response

## HIV infection and AIDS worldwide

### HIV-1

While a cumulative total of more than 366 000 adults with AIDS had been formally reported to WHO from 162 countries by 1 June 1991, the true cumulative global total is estimated at more than one million (23). In addition, over 500 000 infants and children are estimated to have developed AIDS. This brings the cumulative worldwide number of persons with AIDS to more than 1.5 million men, women, and children.

To have a more complete view of the AIDS pandemic, it is necessary to bear in mind the disease's long incubation period and understand the way in which HIV infection is spreading.

In the early 1980s only about 100 000 adults worldwide were estimated to be infected with HIV. As of 1991 this figure has risen to at least 8-10 million. If the figure of about 10 million is used, close to 6 million infected adults would be in Africa, 2 million in the Americas, more than 500 000 in Europe, and more than 1 million in Asia and Oceania.

In North America, Western Europe, and part of the Pacific (including Australia and New Zealand), extensive spread of HIV infection began between

the late 1970s and the early 1980s, primarily among homosexual men and injecting drug users. Heterosexual transmission, which until recently accounted for a relatively small number of new infections, is now increasing at a greater rate than other modes of transmission in many places. According to the latest seroprevalence data, less than 1% of the overall population of these countries is HIV-infected. However, among persons who engage in high-risk behaviour (for example, drug injecting with shared unsterilized needles), seroprevalence is more than 50%.

In sub-Saharan Africa, extensive spread of HIV probably began in the late 1970s and is predominant among sexually active heterosexuals. The prevalence of HIV infection is especially high among prostitutes and their clients. Transmission continues to rise in urban areas, but, increasingly, the virus is also spreading in rural areas, where the majority of the population lives. With approximately as many women as men infected, HIV transmission from a woman to her fetus or infant is common. Transmission through homosexual activity or drug injecting is low, but some transmission through infected blood and unsterilized needles does occur.

Many countries in Latin America initially showed a transmission pattern similar to that of North America and Western Europe. Since the mid-1980s, however, in many countries heterosexual transmission has become a major, if not the predominant, mode of HIV spread, occurring primarily between bisexual males and their heterosexual partners, and female prostitutes and their clients.

Finally, HIV was introduced in the early to mid-1980s in countries in Asia and the Pacific (excluding Australia and New Zealand), Eastern Europe, North Africa, and the Middle East. High rates of HIV infection are now found in parts of South and South-East Asia.

Elsewhere in these countries, the general prevalence of both HIV infection and clinical AIDS has been low.

There is a compelling public health need to know when and where rates of HIV infection are increasing. In Thailand, for example, until recently the infection was limited to the major cities; in 1991 it was being reported in 70 of the country's 73 provinces. Similarly, in the large cities of West Africa a widespread epidemic of heterosexually spread HIV-1 is under way, compounding the already widespread prevalence of HIV-2. On the other hand, the very high rate of increase in the prevalence of infection among groups of homosexual men in the USA started to slow after 1982.

Sentinel HIV surveillance is being initiated by many national AIDS programmes to monitor these trends (24). In sentinel surveillance, selected groups within a population act as "sentinel" groups for monitoring health-related trends in that population. In sentinel HIV surveillance, blood from sentinel groups is regularly and consistently tested. Sentinel surveillance helps ensure that trends in HIV prevalence are recognized and that activities to prevent or slow the spread of HIV are properly targeted.

## **HIV-2**

HIV-2 infection is epidemic in many countries of West Africa, where infection rates have ranged from less than 1% to more than 15% in the general adult population of some cities. Rates have been 5-10 times higher for female prostitutes, suggesting that HIV-2, like HIV-1, is transmitted sexually. Among Senegalese prostitutes, the highest rates of HIV-2 infection were found in women over 50 years old, while HIV-1 was more commonly found in younger women. This has led to speculation that HIV-2 has been present on the African continent longer than HIV-1. A few documented cases have been reported from North and South

America and Europe, but there is no evidence that HIV-2 has become established in any area outside West Africa.

### **Trends in HIV infection and AIDS during the 1990s**

The global prevalence of HIV infections is unlikely to stabilize for at least several decades.

In the industrialized world, the rate of new infections is slowing. However welcome this trend, it should not give rise to complacency, as there continue to be groups that are subject to increased infection with HIV. In addition, because of the long incubation period, about 90% of the persons with AIDS over the next four to five years in the industrialized countries will be those who acquired their infection during the 1980s (25).

In developing countries, the pandemic continues to worsen. Estimates of persons infected with HIV in sub-Saharan Africa have quadrupled between 1987 and 1991. In 1987 most infected persons in sub-Saharan Africa were found in large urban populations; by 1990, extensive spread was already being documented in the rural areas in most such countries, which contain the majority of the continent's population. In South and South-East Asia, data indicate that the total number of HIV-infected persons rose from virtually nil in 1988 to an estimated total of more than 1 million by 1991. This is a much more rapid increase than projected by WHO.

Since heterosexual transmission is becoming the predominant mode of HIV spread, the number of infected women of childbearing age – estimated at more than 3 million worldwide by mid-1991 – is rising steeply. This means a corresponding increase in the number of infants acquiring HIV infection from their mother before, during, or shortly after birth. It is ex-

pected that, by the year 2000, 5-10 million infants and children below the age of 5 will have become infected with HIV, and that most of them will have developed AIDS and died. Paediatric AIDS will thus be a major global cause of death among infants and children – in some countries the biggest such killer – during the 1990s.

The pandemic's increasing global impact on children will be compounded by the increasing number of orphans among uninfected children. It is expected that, during the 1990s, 10-15 million uninfected children less than 15 years old – mostly in sub-Saharan Africa – will be orphaned as their HIV-infected mothers, or both parents, succumb to AIDS.

WHO's conservative projection in mid-1991 of the number of men, women, and children expected to have become infected by the year 2000 is 30–40 million. If HIV prevalence over the next few years increases markedly in Asia and Latin America and continues to expand in sub-Saharan Africa, this projection will need to be revised upward. The inevitable conclusion is that in the 1990s the HIV/AIDS situation will be much more serious than in the 1980s. In particular, because the number of persons affected by the pandemic will increase greatly, needed health and social services must be planned for and developed now.

## **What the United Nations system is doing about AIDS**

As the specialized agency of the United Nations responsible for directing and coordinating international health work, the World Health Organization (WHO) has the central role in the global response to AIDS. With the help of other members of the United Nations system, WHO seeks to further the three objec-

tives of the Global AIDS Strategy: to prevent HIV transmission, to reduce the personal and social impact of HIV/AIDS, and to unify national and international efforts against AIDS. The Global AIDS Strategy was endorsed by the United Nations General Assembly in 1987 (26).

Through its Global Programme on AIDS, WHO provides direct technical, operational and financial support to developing countries. Over 160 national AIDS programmes have been planned and are being implemented with such support, including the posting of GPA field staff in countries and the provision of financial resources, supplies and equipment, and technical guidance. In addition, the Global Programme on AIDS supports vaccine development, carries out epidemiological surveillance, pursues advocacy for non-discriminatory care and support of persons infected with HIV, attempts to combat denial and complacency about the pandemic, and develops and disseminates validated information and policy guidance, such as guidelines on HIV disinfection, policy statements on HIV transmission in health care settings, and international specifications for condoms.

AIDS activities carried out by the United Nations system organizations are coordinated primarily through the Interagency Advisory Group established specifically by WHO for that purpose.

One of the major United Nations bodies contributing to the implementation of the Global AIDS Strategy is the United Nations Development Programme (UNDP). In March 1988 an agreement was signed by the Director-General of WHO and the Administrator of UNDP. This agreement, called the WHO/UNDP Alliance, combines the strengths of WHO as an international leader in health matters with those of UNDP as a leader in socioeconomic development.

Other United Nations bodies and international organizations working with WHO include:

- United Nations Educational, Scientific and Cultural Organization (UNESCO) (27)
- United Nations Children's Fund (UNICEF)
- United Nations Population Fund (UNFPA)
- World Bank
- International Labour Office (ILO) (21, 28-30)
- League of Red Cross and Red Crescent Societies (11)
- Food and Agriculture Organization of the United Nations (FAO)
- United Nations Population Division
- United Nations Centre for Human Rights (31).

As part of its collaboration with the United Nations Office at Vienna, WHO also has close links with the United Nations Division of Narcotic Drugs, the International Narcotics Control Board, the United Nations Fund for Drug Abuse Control, the Division of Social Development and the Branch for the Advancement of Women of the Centre for Social Development and Humanitarian Affairs.



---

# Conclusion

HIV and AIDS will menace the physical health of individuals and the social and economic health of much of humankind for many years to come. The disease itself and the fear it engenders form a dual threat to which the response – directed against persons with HIV/AIDS – has often been stigmatization and discrimination. Knowledge is the fundamental weapon against this threat. It is hoped that the knowledge distilled in this document will help readers protect themselves and their loved ones.

---

# Glossary of technical terms

**AIDS** (acquired immunodeficiency syndrome): The last and most severe stage of the clinical spectrum of HIV-related disease.

**Antibodies:** Immunoglobulin molecules in the blood produced by the body's immune system and directed against specific agents, such as "alien" viruses or bacteria.

**ARC** (AIDS-related complex): The moderate, intermediate clinical manifestations of HIV infection, which are not as severe as those that define AIDS.

**Asymptomatic:** Without symptoms.

**Autologous transfusion:** Transfusion of a person's own blood that has been donated and stored prior to need, or salvaged during or after an operation and reused.

**DNA** (deoxyribonucleic acid): A nucleic acid that carries genetic information in all organisms except certain viruses, the RNA viruses, which include HIV.

**False-negative HIV antibody test:** A negative test result that suggests a person is not HIV-infected when in fact he or she is infected.

**False-positive HIV antibody test:** A positive test result that suggests a person is HIV-infected when in fact he or she is not infected.

**HIV** (human immunodeficiency virus): The retrovirus that causes AIDS in humans.

**HIV-1:** The retrovirus that is the principal worldwide cause of AIDS.

**HIV-2:** A retrovirus closely related to HIV-1 that also causes AIDS in humans, found principally in West Africa.

**HIV-antibody-negative:** (of a blood sample) Containing no antibodies to HIV.

**HIV-antibody-positive:** (of a blood sample) Containing antibodies to HIV.

**Incubation period:** The period of time between entry of the infecting pathogen into the body and the first symptoms of disease.

**Kaposi sarcoma:** A cancer or tumour of the walls of the blood vessels or the lymphatic vessels.

**Lymphadenopathy:** Swelling of the lymph nodes. Persistent and generalized lymphadenopathy is one of the early clinical signs of HIV infection.

**Maternal antibodies:** Antibodies present in an infant's blood that have been passively acquired from the mother *in utero*. Because maternal antibodies to HIV continue to circulate in the infant's blood up to the age of 15-18 months, it is difficult to determine whether the infant is infected.

**Opportunistic infection:** An infection with a microorganism that does not ordinarily cause disease, but that becomes pathogenic in a person whose immune system is impaired, as by HIV infection.

**Pathogen:** An agent such as a virus or bacterium that causes disease.

**Plasma:** The fluid portion of the blood.

**Retrovirus:** An RNA-containing virus that can transcribe its genetic material into the DNA of its host's cells by the action of an enzyme called reverse transcriptase. This is the reverse of the usual, or DNA-to-RNA, transcription.

**RNA (ribonucleic acid):** A nucleic acid associated with the control of chemical activities inside a cell. Some viruses, including HIV, carry RNA instead of the more usual DNA.

**Seroconversion:** The development of antibodies in response to an antigen. With HIV, seroconversion usually occurs 4-12 weeks after infection is acquired, but in a very few cases it has been delayed for 6 months or more.

**Serological testing:** Testing of a sample of blood serum.

**Seronegative:** Serologically negative. Showing negative results in a serological test.

**Seropositive:** Serologically positive. Showing positive results in a serological test. A person who is seropositive for HIV antibody is considered HIV-infected.

**Seroprevalence:** The proportion of a given population with a particular marker in the blood, such as antibody to HIV, at a specific time.

**Serosurvey:** Systematic testing of sera from a group of persons to determine the frequency of a particular marker, such as antibody to HIV, in that population.

**Symptomatic:** With symptoms.

**Viraemia:** The presence of virus in the blood, which implies active viral replication.

---

# References

Works cited in the text can be obtained from the GPA Documentation Centre, World Health Organization, 1211 Geneva 27, Switzerland, which can also provide copies of other GPA documents. For information regarding WHO publications, including those in the WHO AIDS Series, please contact the Distribution and Sales Service, World Health Organization, 1211 Geneva 27, Switzerland.

1. Resolution WHA40.26. Global strategy for the prevention and control of AIDS. *Handbook of resolutions and decisions of the World Health Assembly and the Executive Board*. Vol. 3, 1985-1989. 2nd ed. Geneva: World Health Organization, 1987.
2. Acquired immunodeficiency syndrome (AIDS) and sexually transmitted diseases. Consensus statement from the consultation on sexually transmitted diseases as a risk factor for HIV transmission. *Weekly epidemiological record*, 64:45-48 (1989). (Reproduced and available as unpublished WHO document WHO/GPA/INF/89.1.)
3. *Consensus statement on accelerated strategies to reduce the risk of transmission of HIV by blood transfusion*. Unpublished WHO document WHO/GPA/INF/89.13 [WHO/LAB/89.6] (1989).
4. *Minimum targets for blood transfusion services*. Unpublished WHO document WHO/GPA/INF/89.14 [WHO/LAB/89.5] (1989).

5. *Essential consumables and equipment for a blood transfusion service*. Unpublished WHO document WHO/GPA/INF/89.15 [WHO/LAB/89.8] (1989).
6. *Essential blood components, plasma derivatives and substitutes*. Unpublished WHO document WHO/GPA/INF/89.16 [WHO/LAB/89.7] (1989).
7. *Use of plasma substitutes and plasma in developing countries*. Unpublished WHO document WHO/GPA/INF/89.17 [WHO/LAB/89.9] (1989).
8. *Guidelines for the appropriate use of blood*. Unpublished WHO document WHO/GPA/INF/89.18 [WHO/LAB/89.10] (1989).
9. *Statement from the consultation on breast-feeding/ breast milk and human immunodeficiency virus (HIV)*. Unpublished WHO document WHO/SPA/INF/87.8 (1987).
10. *Guidelines for nursing management of persons infected with human immunodeficiency virus (HIV)*. Geneva, World Health Organization, 1988 (WHO AIDS Series No. 3).
11. *Guidelines on AIDS and first aid in the workplace*. Geneva, World Health Organization, 1990 (WHO AIDS Series No. 7).
12. *Consensus statement from the consultation on AIDS and sports*. Unpublished WHO document WHO/GPA/INF/89.2 (1989).
13. *Prevention of sexual transmission of human immunodeficiency virus*. Geneva, World Health Organization, 1990 (WHO AIDS Series No. 6).
14. *Report of a WHO consultation on the prevention of human immunodeficiency virus and hepatitis B virus transmission in the health care setting*. Unpublished WHO document WHO/GPA/DIR/91.5 (1991).
15. *AIDS information for travellers*. WHO/GPA brochure (1987).

16. *Note verbale* from the Director-General, World Health Organization. Global Programme on AIDS *Progress Report Number 4*. Unpublished WHO document WHO/GPA/GEN/88.3 [Annex 7] (1988).
17. *Guidelines on sterilization and disinfection methods effective against human immunodeficiency virus (HIV)*, Second edition. Geneva, World Health Organization, 1989 (WHO AIDS Series No. 2).
18. *Blood transfusion guidelines for international travellers*. Unpublished WHO document WHO/GPA/INF/88.4 (1988).
19. *Guidelines for treatment of acute blood loss*. Unpublished WHO document WHO/GPA/INF/88.5 (1988).
20. *Guidelines for counselling about HIV infection and disease*. Geneva, World Health Organization, 1990 (WHO AIDS Series No. 8).
21. *Statement from the consultation on AIDS and the workplace*. Unpublished WHO document WHO/GPA/INF/88.7 Rev.1 (1988).
22. Global Programme on AIDS and Expanded Programme on Immunization. Joint WHO/UNICEF statement on early immunization for HIV-infected children. *Weekly epidemiological record*, 64:48-52 (1989). (Reproduced and available as unpublished WHO document WHO/GPA/INF/89.6 (1989).)
23. *Current and future dimensions of the HIV/AIDS pandemic: a capsule summary*. Unpublished WHO document WHO/GPA/RES/SFI/91.4 (1991).
24. *Sentinel surveillance for HIV infection: a method to monitor HIV infection trends in population groups*. Unpublished WHO document WHO/GPA/DIR/88.8 (1988).
25. J. Chin & J.M. Mann. HIV infections and AIDS in the 1990s. *Annual Review of Public Health*, 11:127-42 (1990).

26. Resolution 42/8 of the General Assembly of the United Nations. Prevention and control of acquired immune deficiency syndrome (AIDS); 48th plenary meeting, 26 October 1987 (available as Annex 3 in Global Programme on AIDS *Progress Report Number 4*. Unpublished WHO document WHO/GPA/GEN/88.3 (1988)).
27. *International conference on the implications of AIDS for mothers and children: Technical statements and selected presentations*. Unpublished WHO document WHO/GPA/DIR/89.12 (1989).
28. *AIDS and the workplace. What you need to know about AIDS*. Unpublished WHO document WHO/GPA/INF/90.1 (1990).
29. *Statement from the consultation on AIDS and seafarers*. Unpublished WHO document WHO/GPA/INF/89.21 (1989).
30. *Statement from the consultation on action to be taken after occupational exposure of health care workers to HIV*. Unpublished WHO document WHO/GPA/INF/89.20 (1990).
31. *Report of an international consultation on AIDS and human rights, Geneva, 26-28 July 1989*. New York, United Nations, 1991 (HR/PUB/90/2).