



The Status and Trends of the Global HIV/AIDS Pandemic: Final Report

This Final Report from the XI International Conference on AIDS Satellite Symposium, entitled The Status and Trends of the Global HIV/AIDS Pandemic, was jointly organized by AIDSCAP, the François-Xavier Bagnoud Center for Health and Human Rights of the Harvard School of Public Health and the Joint United Nations Programme on HIV/AIDS (UNAIDS). This Symposium was held in Vancouver, Canada, on July 5-6, 1996. The report, coauthored by the 50 Symposium participants, reviews the current status and trends of the global HIV/AIDS pandemic; including the epidemiological and behavioral patterns, projects trends for the epidemics in all regions of the world; identifies specific data needs for monitoring and forecasting and makes various recommendations.



Official Satellite Symposium



Final Report



The XI International Conference on AIDS, Official Satellite Symposium, The Status and Trends of the Global HIV/AIDS Pandemic was jointly organized by the AIDS Control and Prevention (AIDSCAP) Project of Family Health International, the [François-Xavier Bagnoud Center for Health and Human Rights of the Harvard School of Public Health](#), the [Joint United Nations Programme on HIV/AIDS \(UNAIDS\)](#); and was partially funded by the [United Nations Population Fund \(UNFPA\)](#) and [The United States Agency for International Development](#).

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Introduction

The Status and Trends of the Global HIV/AIDS Pandemic Satellite Symposium of the XI International Conference on AIDS was jointly organized by the AIDS Control and Prevention (AIDSCAP) Project of Family Health International, the François-Xavier Bagnoud Center for Health and Human Rights of the Harvard School of Public Health and the Joint United Nations Programme on HIV/AIDS (UNAIDS). This two-day Symposium, held on 5-6 July 1996 in Vancouver, Canada, resulted from an extraordinary response to The Status and Trends of the HIV/AIDS Epidemics in Africa Workshop held in Kampala, Uganda, in December 1995 prior to the IX International Conference on AIDS and STD in Africa.

With specific recommendations for urgent action to prevent the further spread of HIV in Africa, the Kampala workshop report raised issues that cut across HIV/AIDS epidemics in developing countries globally and provided a successful model for future action-oriented international HIV/AIDS symposia. The workshop report, released during the Kampala conference and quickly disseminated internationally by the workshop organizers, became available for immediate programmatic reorientation, planning and implementation by policy makers and program managers working on HIV/AIDS-related issues in Africa and around the world.

Seizing on the impact of the Kampala initiative, the workshop's co-chairs, Daniel Tarantola of Harvard's François-Xavier Bagnoud Center and Peter Lamptey of AIDSCAP, quickly convened a larger Symposium on The Status and Trends of the Global HIV/AIDS Pandemic at the XI International Conference on AIDS in Vancouver, Canada, which they also co-chaired. The objectives for the Vancouver Symposium included: reviewing the current status and trends of the global HIV/AIDS pandemic, including the epidemiological and behavioral patterns; identifying the specific data needs for monitoring and forecasting; and producing a consensus report on the global pandemic and on current as well as projected trends for the epidemics in various parts of the world.

Ten regional teams composed of 50 leading epidemiologists, public health and development specialists (see List of Participants at end of this report), each nominated by an international steering committee, were chosen to collect and analyze data and information on the status and trends of HIV/AIDS in their region prior to the Symposium. Regional working group sessions held by each team on site provided the basis for summary presentations to the Symposium participants. Finally, a plenary discussion was held on each region at which the Symposium participants reached conclusions and made their final recommendations for this report.

Released within 24 hours of the Symposium's conclusion, the provisional Vancouver report was amended during the Vancouver conference to the version herein. A day later, the Vancouver Symposium organizers began planning the next Status and Trends of the Global HIV/AIDS Pandemic Symposium to be convened at the 4th International Conference on AIDS in Asia and the Pacific, to be held in Manila, Philippines, in October 1997.

Executive Summary

Globally, the HIV/AIDS pandemic continues to sweep across continents: the number of estimated adult HIV infections worldwide has more than doubled since 1990 from 10 million to a mid-1996 total of 25.5 million. Composed of distinct epidemics, each with its own features and force, the pandemic is disproportionately impacting the developing world. HIV infections, however, are leveling off and even decreasing in some populations. HIV incidence has declined in young women in Uganda, young men in Thailand and in gay men in the U.S., Australia, Canada and western Europe.

From the beginning of the pandemic until mid-1996, an estimated 27.9 million people worldwide were infected with HIV. Of these, 14.9 million were men (58 percent) and 10.5 million were women (42 percent). The majority of HIV infections -- 26 million (93 percent) -- have occurred in developing countries. The largest numbers of HIV-infected individuals were in sub-Saharan Africa, totaling 19 million (68 percent of the global total), and in South and Southeast Asia, totaling 5 million (18 percent of the global total). The number of HIV-infected people in South and Southeast Asia is now more than twice the total number of those infected in the entire industrialized world. Worldwide, 5.8 million people (4.5 million adults and 1.3 million children), 75 percent of all those with AIDS, are estimated to have died from AIDS.

Sub-Saharan Africa, representing about 60 percent of the world's total HIV infections, accounts for almost 90 percent of the current 13.3 million HIV infections in adults and adolescents in Africa. The rates of newly acquired HIV infections are highest in the 15- to 24-year-old group among both females and males in most of sub-Saharan Africa. Of the 3 million HIV-infected infants born in the world with HIV infection since the beginning of the pandemic, over 90 percent have been born in Africa. Many of these children typically develop AIDS and die within a few years.

Eighteen countries in the region have at least 100,000 people living with HIV. Central and East African countries have 37 percent of all current HIV infections on the continent. A second group of countries in southern Africa contributes about 15 percent to the total number of adults and adolescents living with HIV in the region. In other sub-Saharan countries -- mostly in west and central Africa -- HIV epidemics are currently passing through their intermediate stage where between 1 and 10 percent of women attending urban antenatal clinics are HIV-infected. In contrast to the increasing spread of HIV-1, the prevalence of HIV-2 has remained rather stable in West Africa, perhaps the result of the higher transmissibility of HIV-1 compared to HIV-2.

Urban and trading centers generally show substantially higher prevalence of HIV infection than rural areas; however, rates of HIV infection in some rural populations have increased steadily. Open conflicts, environmental degradation, natural disasters and low-intensity wars also have led millions of Africans to leave their homes and, in some situations, to turn to survival strategies that have increased the practice of unsafe sex. Migration and urbanization also have led to high concentrations of predominantly male communities and increased participation in commercial sex.

Demographic surveys in several countries have already noted significant increases in infant and child mortality. Projections for Zambia and Zimbabwe indicate that AIDS may increase child mortality rates nearly threefold by the year 2010. Due to high levels of fertility, populations will generally continue to grow, but critical deficits will affect the economically active age groups.

Asia, home to more than 60 percent of the world's adult population, presents epidemiology

and HIV prevalence estimates that are extremely diverse, ranging from countries with low prevalence (Mongolia, DPR Korea) to countries with high prevalence (Cambodia, Myanmar and Thailand). HIV is spreading mostly through heterosexual contact. Infected men probably outnumber infected women by a factor of 3 to 1 or more, and gender inequality and the frequent practice of men visiting sex workers have strongly influenced spread of HIV. Sharing of needles among injecting drug users (IDUs) also played a significant role early in the epidemics, particularly in the Golden Triangle region (from Thailand and Vietnam, across southern China, to Myanmar and Manipur State in India) and in northern Malaysia.

Thailand has an estimated three-quarters of a million people living with HIV. Yet there is evidence that Thailand's active multi-sectoral prevention efforts are taking effect, as HIV infection levels in military conscripts have dropped from 3.6 percent in 1993 to 2.5 percent in 1995. Pediatric HIV infection is difficult to assess regionally, but an estimated 6,400 children are infected annually in Thailand, making up approximately 10 percent of the new infections of HIV.

Evidence in India suggests rapid, extensive and uncontrolled spread of HIV in many parts of the country, and HIV seroprevalence is high in the South and West. In Bombay, prevalence went from 2 to 3 percent in sexually transmitted disease (STD) clinic attendees before 1990 to 36 percent in 1994. Injecting drug use has been a problem in Manipur State, where prevalence reached 60 percent by 1992. Evidence suggests an estimated 2 to 5 million HIV infections nationwide in mid-1996. Low use of condoms and high rates of sexually transmitted disease continue to be a major problem in India, threatening to multiply exponentially the spread of HIV.

In Cambodia data indicate that the current extensive HIV epidemic started during the late 1980s or early 1990s and is predominantly occurring among heterosexuals with multiple sex partners. Myanmar has one of the most serious epidemics in the region, with an estimated half a million people infected with HIV by 1996. In Malaysia HIV infection levels in IDUs have grown rapidly from 0.1 percent in 1988 to 20 percent in 1994.

In Vietnam, evidence shows the HIV epidemic to be growing rapidly, with high levels in IDUs in treatment (32 percent in 1992-95), and increasing levels among young men and women in the south.

China, because of its size and rapid changes in social and sexual behavior, represents another major potential focus of the epidemic in Asia. The majority (about 70 percent) of reported HIV infections and AIDS cases have been among IDUs in Yunnan Province, but infections are believed to be increasing among heterosexuals in southern China, especially in the areas surrounding Hong Kong. An estimated 10,000 persons were infected with HIV in China at the end of 1993, growing to 100,000 by the end of 1995.

HIV transmission may be starting in the heterosexual population in Laos. Bangladesh, Indonesia, Nepal and Sri Lanka show high levels of other STDs, implying a strong possibility for extensive HIV spread. In Hong Kong, Japan, Mongolia and the Republic of Korea, extensive spread has not been documented. No cases of AIDS or HIV have been reported in DPR Korea or Bhutan. In the Philippines the epidemic shows slower growth, and in Singapore, HIV infection levels in sex workers have been growing quite slowly.

In **Latin America and the Caribbean** the spread of HIV/AIDS has been slower than in other regions, but the pandemic is well-established and some Caribbean countries report AIDS incidence rates among the highest in the world. Dominant modes of transmission vary from one country to the next: mainly through homo- and bisexual contacts in some

countries, to epidemics connected to injecting drug use in others, to still others primarily determined by heterosexual transmission. Epidemiological evidence signals a rapid shift of new infections to younger ages, particularly to young people between 15 and 24 years old.

The number of new HIV infections in Mexico, Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Cuba, Dominican Republic, Haiti and Puerto Rico continues to rise, reflecting increasing HIV/AIDS incidence and accelerated heterosexual transmission.

Haiti is of particular importance because, perhaps alone in the region, it represents a relatively mature epidemic. HIV prevalence is particularly high among sex workers, STD clinic attendees and tuberculosis (TB) patients. High rates of HIV prevalence are found among pregnant women aged 14 to 24.

In the English-speaking Caribbean, the male-to-female ratio of new AIDS cases has fallen dramatically over the past 10 years, under 2 men to 1 woman in 1994. Women aged 15 to 19 now have higher annual incidence rates than men of the same age. AIDS is the leading cause of death among young men in some Caribbean countries, while pediatric AIDS cases have been steadily rising and now account for 5 percent of all new cases. The extremely low incidence of HIV infection through contaminated blood represents a partial success story for the Caribbean region.

HIV infections and AIDS cases in South America are rising steadily. Brazil accounts for 75 percent of AIDS cases reported and is followed by the Andean Region (15 percent) and the Southern Cone (10 percent). Sexual transmission of HIV accounts for 74 percent of all infections (51 percent homo/bisexual and 23 percent heterosexual), injecting drug use 19 percent (although recent data in Brazil suggests that the HIV transmission through injecting drug use seems to be leveling off) and 7 percent for blood and vertical transmission and undocumented cases.

The impact of HIV/AIDS on morbidity and mortality is being seen in major urban centers, such as in São Paulo, Brazil, where AIDS is now the leading cause of death in women of reproductive age.

North America has seen the HIV epidemic slow in recent years as new infections start to level off, largely due to the decline in sexual transmission between men as a result of behavior change. Nevertheless, HIV prevalence in gay men remains high on the continent. In the United States, HIV prevalence among IDUs has decreased. AIDS cases related to heterosexual contact represent an increasing proportion of newly diagnosed cases in North America.

Since the start of the epidemic from 1 to 1.5 million cumulative HIV infections have occurred in North America, and HIV infection has been one of the major causes of death for individuals between the ages of 25 and 44. Among men in this age group, it was the leading cause of death in the U.S. and the second leading cause of death in Canada in 1994. In the same year, HIV infection was the third leading cause of death among 25- to 44-year-old women in the U.S. An estimated 12,000 children in the U.S. are living with HIV, although AIDS incidence among children under 13 has declined annually since 1990.

Although there has been an overall slowing in AIDS incidence, there has been substantive shift in the populations affected. In 1995 AIDS incidence was 6.5 times greater for blacks and 4 times greater for Hispanics than for whites, 20 percent of persons diagnosed with AIDS were women, and 15 percent were infected heterosexually. AIDS among prisoners was 7 times the rate of the non-incarcerated population, and AIDS was the second leading

cause of death among prisoners.

In **Europe** an estimated 450,000 adults were living with HIV in western Europe at the end of 1993, with an annual incidence of around 40,000 since 1990. Over the past 2 to 3 years, AIDS incidence appears to have stabilized in several countries in northwestern Europe and condom use increased markedly, particularly for the most sexually active population groups. In contrast, countries in southwestern Europe show no indication of AIDS leveling off.

Transmission of HIV through injecting drug use continues to play a major role in the dynamics of the epidemic. It is responsible for the majority of AIDS cases in some of the western countries with highest incidence (Spain and Italy) and is strongly associated with AIDS cases occurring among heterosexual adults and among children in these countries.

In central and eastern Europe (with the exception of Romania) and central Asia, the HIV/AIDS epidemic is much more recent and AIDS incidence much lower than in western Europe. In some countries, a rapid spread of HIV is indicated, mainly linked with injecting drug use. In Poland and the Federal Republic of Yugoslavia, where IDUs account for the largest proportion of cases, the incidence of AIDS is rising rapidly.

Before 1990, most AIDS cases were diagnosed in men who have sex with men (MSM). Since 1990, however, IDUs account for the highest proportion of yearly diagnosed cases in the region (43 percent of adult and adolescent cases in 1995). The shift in transmission patterns is accompanied by an increase in the proportion of female cases, which rose from 11 percent in 1986 to 20 percent in 1995.

The vast majority of children have been infected through mother-to-child transmission, and HIV prevalence in pregnant women has been much higher in urban than in rural areas. The epidemic among children is dominated by the epidemic in Romanian hospitals, which was detected in 1989 and accounts for over 50 percent of the 6,060 pediatric cases reported in the European region. Another, though much smaller, epidemic among children in hospitals occurred in the Russian Federation in the late 1980s. The most worrisome information coming from STD surveillance arose recently from the independent republics of the former Soviet Union. Substantial increases in syphilis rates have been seen since 1990 in several of these states.

In the **North and South Pacific** around 7,400 cases of AIDS had been reported by the end of 1995, with over 7,000 of them in Australia and New Zealand, where the major pathway of HIV transmission (about 85 percent of HIV infections) has been through sexual contact between men. This pattern also has been reflected in the French Territories of New Caledonia and French Polynesia. The HIV epidemic in Papua New Guinea (PNG) has developed more recently and appears to involve a major component of heterosexual transmission; by the end of 1994 PNG had an estimated 4,000 adults living with HIV, overtaking Australia on a per-capita basis to give the highest prevalence in the region.

The incidence of AIDS has reached a plateau in Australia, and appears to be declining in New Zealand, due to the drop in the rate of sexual transmission of HIV between men that mostly occurred ten years earlier. In Australia, and to a lesser extent New Zealand, high rates of STDs other than HIV in indigenous people have led to mounting concern about the potential for a major heterosexual epidemic of HIV infection in these populations, among whom the rate of HIV diagnosis has increased in the past six years.

In conclusion, the HIV/AIDS pandemic is as powerful as ever: HIV continues to spread in the industrialized world, where, increasingly, it affects people who, for reasons of race, sex,

behavior or social and economic status, have lesser access to services. From a global perspective, the pandemic disproportionately affects the developing world, where the needs for effective prevention and care are escalating. But the pandemic has now become immensely complex. It has become fragmented and is now a mosaic composed of a multitude of epidemics, which can be distinguished on the basis of: predominant modes of transmission; geographic focus; HIV sub-types; age, sex, socioeconomic or behavioral characteristics of the populations most affected; rapidity of or potential for HIV spread; stage of maturity and, in some communities and countries, declining HIV incidence.

As the HIV epidemics pursue their course, the social, economic and demographic impacts of HIV/AIDS in particular in the developing world are likely to exacerbate the burden on individuals, communities and countries, which will challenge the stability of entire regions.

Current evidence of the effectiveness of HIV prevention and recent progress achieved in the development of new therapies provide the scientific basis on which an expanded response to growing prevention and care needs can be built.

Existing epidemiological surveillance systems are inadequate to monitor the HIV epidemics effectively. Creativity and sustained effort must be applied to collect and analyze data that better reflect and will help understand, predict and prevent the dynamic spread of HIV in vulnerable populations worldwide.

Global Overview

In mid-July 1996, an estimated 21.8 million adults and children worldwide were living with HIV/AIDS, of whom 20.4 million (94 percent) were in the developing world. Of the adults, 12.2 million (58 percent) were male and 8.8 million (42 percent) were female.¹ Close to 19 million adults and children (86 percent of the world total) were living with HIV/AIDS in sub-Saharan Africa and in South and Southeast Asia.

Worldwide during 1995, 2.7 million adult HIV infections occurred in adults (averaging more than 7,000 new infections each day). Of these, about 1 million (an average of nearly 3,000 new infections per day) occurred in Southeast Asia and 1.4 million infections (close to 4,000 new infections per day) were in sub-Saharan Africa. The industrialized world accounted for about 55,000 new HIV infections in 1995 (nearly 150 new infections per day; about 2 percent of the global total).

In 1995 approximately 500,000 children were born with HIV infection (about 1,400 per day); of these children 67 percent were in sub-Saharan Africa, 30 percent in South and Southeast Asia, and over 2 percent in Latin America and the Caribbean.

From the beginning of the pandemic until mid-1996, an estimated 27.9 million people worldwide have been infected with HIV. The largest numbers of individuals ever infected with HIV were in sub-Saharan Africa, totaling 19 million (68 percent of the global total), and in South and Southeast Asia, totaling 5 million (18 percent of the global total).

Since the beginning of the pandemic, the majority of HIV infections—26 million (93 percent)—have occurred in the developing world. The number of HIV-infected people in South and Southeast Asia is now more than twice the total number of infected people in the entire industrialized world.

The global cumulative number of HIV infections among adults has more than doubled since the beginning of the decade, from about 10 million in 1990 to almost 25.5 million by

mid-1996. Of these, 14.9 million were men (58 percent) and 10.5 million were women (42 percent).

More than 6 million adults have developed AIDS from the beginning of the pandemic to July 1996, and of these 4.5 million (close to 75 percent) were in sub-Saharan Africa; 0.4 million were in Latin America and the Caribbean (7 percent); and 0.75 million were in North America, Europe and North and South Pacific combined (12 percent). In South and Southeast Asia, where the pandemic gained intensity more recently, it is estimated that 330,000 adults have developed AIDS. Of the 1.6 million children with AIDS, the majority -- 1.4 million (85 percent) -- were in sub-Saharan Africa.

By July 1996, 5.8 million people (4.5 million adults and 1.3 million children), 75 percent of all people with AIDS, are estimated to have died from AIDS worldwide.

In summary, the HIV/AIDS pandemic is as powerful as ever. This report will show that the pandemic is now composed of distinct epidemics each with their own features and force, and disproportionately impacting on the developing world. The following sections of this report will show that as the HIV/AIDS epidemics within each region and country have become increasingly diverse and fragmented, they have created a multifaceted and devastating pandemic.

The Scourge of AIDS Marches On Estimated Number of Persons Living with HIV/AIDS, July 1996



Click on this icon to see a detailed image (51K)

Global Total: 21.8 million HIV-infected adults and children.

Source: UNAIDS 6/96

1 For more details, see "The HIV/AIDS Situation in mid-1996, Global and Regional Highlights. Fact Sheet 1 July 1996," UNAIDS and WHO, Geneva, Switzerland.

Africa and the Middle East

Sub-Saharan Africa

By mid-1996, 13.3 million adults were living with HIV in sub-Saharan Africa, representing about 60 percent of the world's total. Three broadly defined geographic areas, which include countries with severe epidemics and others with epidemics at their intermediate stages, account for almost 90 percent of all current HIV infections in adults and adolescents in Africa. Within these three areas, 18 countries have at least 100,000 people living with HIV. In central/eastern Africa, Cameroon, Ethiopia, Kenya, Rwanda, Sudan, Uganda and Zaire have 37 percent of all current HIV infections on the continent. A similar proportion is contributed by a second group of countries in southern Africa: Botswana, Malawi, Mozambique, South Africa, Tanzania, Zambia and Zimbabwe. Finally, West African countries, including Burkina Faso, Côte d'Ivoire, Ghana and Nigeria, contribute about 15 percent to the total number of adults and adolescents living with HIV in Africa.

In Kenya, Malawi, Rwanda, Tanzania, Uganda, Zambia, Zimbabwe (countries where HIV began to spread widely in the early 1980s), more than 10 percent of women attending

antenatal clinics surveyed in urban areas have been found to be HIV-infected, with rates which may exceed 40 percent in some surveillance sites. In these populations, transmission of HIV occurs mainly through heterosexual contact, beginning in early teen years and peaking before age 25. Following similar patterns of spread and intensity, HIV epidemics have recently expanded in Botswana, Lesotho, Swaziland and South Africa. The observed high rates of HIV in women of reproductive age have resulted in high numbers of HIV-infected newborns. Of the 3 million HIV-infected infants born in the world with HIV infection since the beginning of the pandemic, over 90 percent have been born in Africa. Many of these children typically develop AIDS and die within a few years.

In other sub-Saharan countries (mostly in west and central Africa) HIV epidemics are currently passing through their intermediate stage where between 1 and 10 percent of women attending urban antenatal clinics are HIV-infected. A few of these countries still have relatively low levels of HIV prevalence, but these have begun to rise in several countries such as Nigeria and Cameroon, which earlier had been relatively spared.

HIV-2 is primarily found in West Africa, but HIV-2 infections also have been confirmed in African countries elsewhere, including Angola and Mozambique. The highest prevalence of HIV-2 infection is found in Guinea Bissau and in southern Senegal. In contrast to the increasing spread of HIV-1, the prevalence of HIV-2 has remained rather stable in West Africa. This is thought to be the result of the higher transmissibility of HIV-1 compared to HIV-2. The likelihood of transmission of HIV-1 through heterosexual intercourse is estimated to be about three times higher per exposure than for HIV-2. In addition, perinatal transmission rates of HIV-2 are reported significantly lower (less than 4 percent for HIV-2 compared with 25 to 35 percent for HIV-1).

Under circumstances that are not yet fully understood, epidemics may suddenly explode, with rates of infection increasing several fold within only a few years, as has been observed recently in Botswana and South Africa. HIV prevalence in pregnant women in South Africa has grown dramatically. From 1993 to 1995, HIV prevalence increased from 4.3 to 11 percent, and from 9.6 to 18 percent, in the provinces of Free State and Kwazulu/Natal, respectively. Population mobility, patterns of sexual behavior, and societal factors are likely to influence the potential for such explosions.

The presence of sexually transmitted diseases (STDs) suggests a marked risk of concurrent HIV infection for at least two reasons: (1) the modes of transmission of HIV and other STDs are similar; and (2) the role of STDs in facilitating the transmission of HIV has been clearly established. STDs are affecting young adults, especially women, with direct serious consequences. For women, these consequences include pelvic inflammatory disease, cervical cancer, infertility and postpartum endometritis. For infants, maternal STDs may lead to low birth weight, neonatal syphilis and gonococcal ophthalmia. The lack of circumcision in males has been shown to add to the risk of acquiring STDs. The World Health Organization estimates that in 1995, 65 million new cases of curable STDs occurred in Africa.

Populations Affected

The transmission of HIV in adults and young people in sub-Saharan Africa occurs essentially through heterosexual contact. Rates of HIV infection among sex workers are now found as high as 80 percent in Nairobi and 55 percent in Abidjan. HIV antibody testing of blood donations remains incomplete in most countries in sub-Saharan Africa. Transfusions continue to play a role in the spread of HIV to those most likely to receive them: women of reproductive age and children.

Within each country, HIV epidemics have progressed with different velocity in various population groups. Early in the evolution of the epidemics, urban populations and rural communities located along highways were more rapidly affected. Among them, young adults with multiple sexual partners acquired high rates of infection. Urban and trading centers generally continue to have substantially higher prevalence of HIV infection than rural areas. But, this pattern is by no means universal: population displacement, armed conflicts, proximity to highways or intense migration and population mobility for economic reasons influence strongly the spread of HIV.

As a result of a combination of these factors, some rural communities of Kenya, Tanzania and Uganda have higher infection rates than those observed in neighboring urban populations. In some countries where HIV epidemics were initially found in urban areas, rates of HIV infection in some rural populations have increased steadily over recent years. In other countries, perhaps with poorer transport networks, this has not been the case.

As epidemics mature, they tend to spread into younger populations, especially young women. The rates of newly acquired HIV infections are highest in the 15- to 24-year-old group among both females and males in most of sub-Saharan Africa. The peak of new infections occurs several years earlier in young women than in young men. In Masaka, Uganda, for example, HIV prevalence in 13- to 19-year-old females is over 20 times higher than in males of the same age. Most of the infections in 15- to 19-year-olds are in females, although as young men get older, their prevalence increases as well.

Apart from possible biological factors, there are at least two reasons for the disproportionate risk of young women acquiring HIV infection early, including: (1) an earlier age of sexual initiation of girls (in Masaka, the median age at first sexual intercourse is 15 for females and 17 for males); and (2) the patterns of sexual mixing, wherein young women tend to have sex with older men in the context of marriage or in exchange for money or advantages, whereas young men tend to have sex with young women. But for many women, the major risk factor for HIV is the behavior of their spouse or regular sexual partner. Monogamous women are at a disadvantage in protecting themselves against HIV when spouses are engaged in high-risk behavior.

Populations on the Move

Major political, social and demographic changes have occurred in sub-Saharan Africa over the last few decades and have resulted in important population displacement, migration and rapid urbanization. The improvement of transportation and communication networks, the increased exchange of goods, and the creation of large-scale development programs have stimulated the movement of young men and women within and across national boundaries. Open conflicts, environmental degradation, natural disasters and low-intensity wars have also led millions of Africans to leave their places of residence and, in some situations, to turn to survival strategies that have increased the practice of unsafe sex. Consequences of political and civil unrest and subsequent population displacement have led to an increased spread in HIV transmission; populations displaced from Ethiopia, Mozambique, Rwanda and Liberia are examples. In addition, the movement of troops from West Africa to Angola and Mozambique has been linked to the spread of HIV-2 to these countries.

Migration within countries, across borders, and urbanization (e.g., from rural areas to urban centers or industrial sites) have led to high concentrations of predominantly male communities and increased participation in commercial sex. Professional groups characterized by mobility, for instance, truck drivers, traders and military personnel, have also been associated with a higher risk of HIV infection. Population mobility facilitates the spread of STDs, including HIV.

Economic development programs (the construction of highways, dams, and the creation of new industries or agriculture projects, for example) need to include an initial appraisal of the potential impact of these projects on the vulnerability of the labor force and the local population to HIV infection and other STDs. Measures to minimize this impact, such as reducing gender imbalance in the labor force, enabling workers to be joined by their families, allowing for regular contacts with distant spouses, and incorporating HIV/STD programs in development schemes, need to be built into the project design. But even with such initiatives, the sheer dynamic of transition towards increasingly urbanized society brings with it changing behavior mores that create new needs and present new opportunities for HIV transmission.

All of these social and demographic changes need to be addressed by well-designed national and inter-country HIV/STD prevention programs based on epidemiological, behavioral and social determinants research.

Burden of Disease

Although the constantly growing HIV/AIDS care needs have already overwhelmed the coping capacity of urban health systems in hard-hit countries, demands for care will increasingly fall on poorly equipped and under-funded rural services, households and individuals. Already, 80 percent of hospital beds in an infectious disease hospital in Abidjan, Côte d'Ivoire, and 50 percent in a hospital in Kampala, Uganda, are occupied by people with HIV.

Demographic surveys in several countries have already noted significant increases in infant and child mortality. Projections for Zambia and Zimbabwe indicate that AIDS may increase child mortality rates nearly threefold by the year 2010. Other estimates point to a more modest impact. In either case, due to high levels of fertility, populations will generally continue to grow, but critical deficits will affect the economically active ages. Studies in areas where 8 percent of the adult population is HIV-infected have measured a doubling of mortality due to HIV and a decrease of 5 years in life expectancy. Some HIV epidemics will have severe effects on the population age structure, indenting the population pyramid in young adults, the main contributors to social and economic development, but this may not occur in all areas.

Successes in Prevention

To date in sub-Saharan Africa, there has been a lack of rigorous evaluation of intervention strategies, especially for the behavioral interventions designed to reduce the sexual transmission of HIV. Without good behavioral, social and contextual data, however, it is difficult to attribute observed changes in HIV prevalence rates to specific program efforts.

STD control programs, through early diagnosis, treatment and the promotion of safer sexual behavior, have been shown to reduce significantly the rates of STD infections. Successful programs have been documented in Zambia and Zimbabwe.

In a research study in Mwanza, Tanzania, early treatment of STDs in a rural population has been associated with a 42 percent decline in the rate of newly acquired HIV infections. Emerging data also show substantial decline in some STDs. This important finding supports the revitalization of STD control programs benefiting from new approaches that have already been initiated in several sub-Saharan countries.

Treating Sexually Transmitted Diseases Reduces HIV Incidence: Results of the Mwanza, Tanzania Trial

- One of the key advances in HIV/AIDS research over the past year has been the confirmation that treating sexually transmitted diseases (STDs) reduces the incidence (rate of new infections) of HIV. This evidence arises from the Mwanza trial, the first randomized controlled trial to demonstrate the impact of preventive measures against HIV in a general population setting.
- The aim of the Mwanza trial was to implement improved STD treatment services for the rural population of this northern Tanzanian region. These services were fully integrated into the primary health care system based on the syndromic treatment method (not requiring laboratory diagnosis) recommended by the World Health Organization. The services were designed to be affordable and replicable on a large scale in resource-poor settings, and their impact was measured in a randomized trial: six communities with the improved STD services (the intervention group) were compared with six matched comparison communities with preexisting STD services (the comparison group).
- A random sample of 12,000 adults in Mwanza was followed over two years to record HIV incidence and the prevalence (proportion of infections in a population) of selected STDs. HIV prevalence at baseline was about 4 percent in both the intervention and comparison groups. Incidence of HIV infections over two years was 1.2 percent in the intervention communities, compared with 1.9 percent in the comparison communities, showing a reduction of about 40 percent from the intervention. Reductions were seen in all age and sex groups.
- Data from Mwanza also show a substantial impact from the intervention on some of the STDs targeted by the treatment program: active syphilis was reduced by 30 to 40 percent, and in men the prevalence of symptomatic urethritis was reduced by 50 percent.
- There was little effect from the Mwanza intervention on asymptomatic STDs, which are common in both women and men in this population. Because syndromic treatment services rely on patients perceiving STD symptoms, the significant impact on symptomatic but not asymptomatic STDs is not surprising.
- A detailed economic evaluation showed that the annual cost of the Mwanza intervention program for a population of 150,000 was about US\$68,000, or about 45 cents per capita. The cost per case of HIV infection averted was about \$250, or \$11 for each year of healthy life saved. This compares favorably with child immunization programs and other highly cost-effective health interventions.
- Results from Mwanza suggest that a large proportion of HIV infections in this population are due to the enhancing effects of other STDs, particularly when these are symptomatic. This may help to explain the very rapid spread of HIV in some parts of Africa and other regions of the developing world. The Mwanza trial has shown that providing effective treatment services for such STDs can significantly reduce their prevalence and the number of new HIV infections.
- The economic data from Mwanza show that improved STD treatment services are not only effective, but highly cost-effective and should, therefore, be promoted as an essential component of HIV/AIDS control activities wherever STDs are highly prevalent. Large-scale

implementation of STD treatment services could have a major impact on the HIV pandemic worldwide.

Hope that the number of new infections occurring may have decreased comes from studies of the epidemic in Uganda, a country with one of the older epidemics in Africa. A study of recent trends in HIV infection in women attending several antenatal clinics in Uganda shows significant declines in HIV prevalence. Between 1990-93 and 1994-95, overall HIV prevalence in pregnant women at sentinel sites decreased 29 percent (from 21 to 15 percent), and decreased 35 percent in both 15- to 19- and 20- to 24-year-olds. Since infection levels (prevalence) in this young age group reflect more recent patterns in new infections (incidence), these data suggest a substantial reduction in the incidence of HIV infection in young people over time.

Declines in HIV Incidence and Prevalence in Pregnant Women and their Relationship to HIV Risk Reduction in Uganda from 1989 to 1995

- In Uganda, recent trends in HIV prevalence (proportion of people infected) in pregnant women detected by sentinel HIV surveillance in urban areas indicate that a substantial decline has occurred in recent HIV incidence (proportion of new infections) in young women.
- From 1990 to 1993 and from 1994 to 1995, HIV prevalence in pregnant women at sentinel sites in Uganda decreased overall by 29 percent (from 21 percent to 15 percent), and by 35 percent in both 15- to 19-year-olds (from 17 percent to 11 percent) and in 20- to 24-year-olds (27 percent to 17 percent). These findings are consistent with a reduction of 30 to 50 percent in HIV incidence in female adolescents and young women in Uganda since 1988.
- Population surveys to assess the determinants of declining HIV incidence in Uganda suggest that changes could be due largely to a reduction in high-risk behavior, including: increased monogamy; reduction in numbers of sexual partners; condom use in sexual relationships at risk of HIV infection; and later age of sexual debut. For example, in 1995 in Kampala, 22 percent of male respondents reported sex with a non-regular partner, of whom 63 percent reported use of a condom in the last sexual encounter at risk of HIV infection.
- A decline in HIV incidence is the most plausible explanation for the observed trends in Uganda, and such changes could result from a reduction in high-risk sexual behavior.
- These findings provide evidence that prevention strategies to change high-risk sexual behavior in Uganda may have had a direct impact on reducing the rate of new HIV infections in some areas of the country.
- Additional studies are required to better identify the determinants of such sexual behavior change in Uganda and assess the extent to which these findings can be applied to other HIV epidemics in sub-Saharan Africa.

Figure 1. Declines in HIV Prevalence in Pregnant Women in Uganda 1990 to 1993 and 1994 to 1995

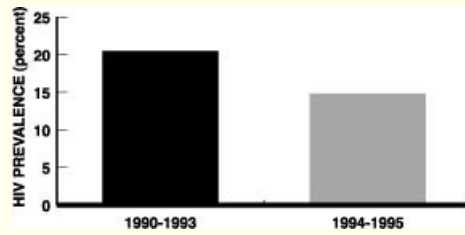
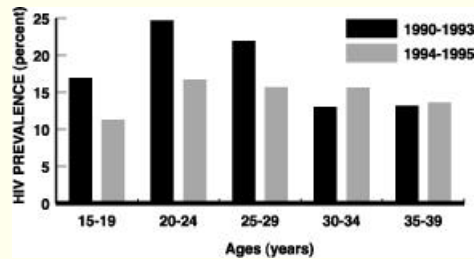


Figure 2. Declines in HIV Prevalence in Pregnant Women in Uganda 1990 to 1993 and 1994 to 1995



Similar declines in HIV prevalence in young adults are reported from another study in the Masaka district in Uganda. These findings could indicate that the growth of the epidemic has been blunted, perhaps transiently, by behavioral changes resulting in decreased spread of HIV in younger age groups. Surveys of such populations suggest that behavior change might have led to these apparent declines; however, more rigorous qualitative and quantitative behavioral and social data will be required to help interpret these results.

Notwithstanding these encouraging signs, new infections remain high, especially in young people. The combination of reductions in levels of infection and continuing evidence of new infections should provide additional impetus for enhancing prevention efforts.

North Africa and the Middle East

This region represents 22 countries ranging from Morocco in the west to Pakistan in the east. Information on HIV infection in the region is sparse. Information available from mandatory screening of blood donors indicates low HIV prevalence in these populations, except for Djibouti.

The highest levels of HIV infection have been documented in Djibouti (9.3 percent in pregnant women and from 2 to 20 percent in STD patients). HIV prevalence among STD patients rose from 1.3 to 5 percent in Sudan; this pattern has also been seen in Yemen, Pakistan and the Syrian Arab Republic. Seventy-five percent of reported AIDS cases are from five countries in the region: Morocco, Sudan, Saudi Arabia, Tunisia and Djibouti.

The future size and trends of the epidemic in this region are difficult to predict. There is anecdotal evidence of high STD rates and risk behaviors. The region is characterized by late introduction of the virus, the status of women in society, the highly stigmatizing nature of STDs, and the difficulty of conducting effective sexual health programs.

Asia

This region includes Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, India,

Indonesia, Hong Kong, Japan, DPR Korea, Republic of Korea, Laos, Malaysia, the Maldives, Mongolia, Myanmar, Nepal, the Philippines, Singapore, Sri Lanka, Thailand and Vietnam. It is home to over 60 percent of the world's adult population, hence what happens in the region will have a major impact on the global pandemic.

The general epidemiology and estimated prevalence rates for these countries are extremely diverse, ranging from countries with low HIV prevalence rates (Mongolia, DPR Korea) to countries with high HIV prevalence (Cambodia, Myanmar and Thailand).

There has been substantial variation in the timing and rate of growth of the epidemic. In some countries, e.g., Cambodia, India, Myanmar and Thailand, HIV spread has been extensive, with extremely rapid growth in some geographic areas. In others, e.g., DPR Korea and the Republic of Korea, the Philippines and Singapore, only limited spread has occurred to date and the rate of growth appears to be substantially lower.

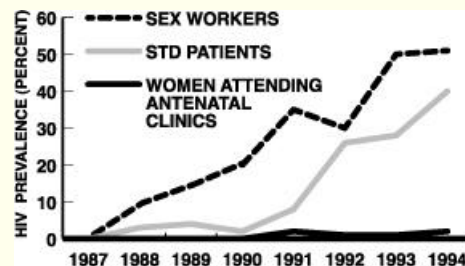
The epidemic in Thailand is among the best documented in the world, with an estimated three-quarter is of a million people living with HIV. Nationally, HIV prevalence among injecting drug users rose quickly in 1988 to approximately 35 percent. HIV among brothel-based sex workers rose from 3.5 percent in 1989 to 33 percent by late 1994. Infection levels in males at STD clinics grew from 0 percent to 8.6 percent over the same time period. HIV prevalence in women attending antenatal clinics has continued to rise steadily from 0 percent in 1989 to 2.3 percent in 1995. This trend is expected to continue for several years. However, there is evidence that prevention efforts are taking effect; HIV infection levels in military conscripts have dropped from 3.6 percent in 1993 to 2.5 percent in 1995.

In India HIV seroprevalence is high in the south and west. For example, in Bombay prevalence went from 2 to 3 percent in STD clinic attendees before 1990 to 36 percent in 1994. HIV prevalence in sex workers rose from 1 to 51 percent between 1987 and 1993, and antenatal clinic women tested positive at a 2.5 percent rate in 1994. There is great geographical variation in India. HIV seroprevalence in the central, eastern and northern parts of the country are generally lower than in the rest of India. Studies among sex workers in Calcutta have shown a clear and consistently low prevalence of 1.2 percent. In Vellore rates among women attending antenatal clinics have been steady at 0.1 percent, although STD clinic rates there grew from 4 percent to 15 percent between 1993 and 1995. Injecting drug use has been a problem in Manipur State, with prevalence reaching 60 percent by 1992. This geographic variability and the size of the country have made estimation of the actual number of infections difficult. At the end of 1994, WHO estimated 1.75 million HIV infections, while evidence suggests an estimate of between 2 and 5 million in mid-1996.

HIV/AIDS in India

- India is experiencing rapid and extensive spread of HIV. This is particularly worrisome since India is home to a population of over 900 million. As a single nation it has more people than the continents of Africa, Australia and Latin America combined.
- There are an estimated 2 to 5 million people infected with HIV in India today, and 50,000 to 100,000 cases of AIDS may have already occurred in the country.
- This epidemic is fueled by both married and unmarried men visiting sex workers.
- The most rapid and well-documented spread of HIV has occurred in Bombay and the State of Tamil Nadu. In Bombay HIV prevalence has reached the level of 50 percent in sex workers, 36 percent in STD patients and 2.5 percent in women attending antenatal clinics.
- Certain regions, such as eastern India (Calcutta area) and northern India (New Delhi region), still show a lower prevalence of HIV (1 to 2 percent) among sex workers.
- Contrary to traditional belief, sexually transmitted diseases and sex with multiple partners are common in the country, both in urban and rural areas. An estimated 3 to 4 percent of some rural populations have a sexually transmitted disease.
- Injecting drug use is a problem in Manipur, which is in the North East region, where 55 percent of drug users are HIV-infected and 1 percent of women attending antenatal clinics are infected with HIV.
- HIV is rapidly spreading to rural areas through migrant workers and truck drivers. Surveys show that 5 to 10 percent of some truck drivers in the country are infected with HIV.
- An estimated 1 to 2 million cases of tuberculosis occur in India every year. In Bombay 10 percent of the patients presenting with tuberculosis are HIV-positive. Tuberculosis is the presenting symptom of AIDS in over 60 percent of AIDS cases.
- A major international and governmental effort is necessary to respond effectively to this severe epidemic.

Figure 3: HIV Prevalence in Bombay



In Cambodia the HIV/AIDS data indicate that the current extensive HIV epidemic started during the late 1980s or early 1990s and is predominantly occurring among heterosexuals with multiple sex partners. To date, there has been no evidence of a significant problem of

injecting drugs in Cambodia. Levels among blood donors in Phnom Penh have risen from less than 0.1 percent in 1991 to about 10 percent in 1995. Dramatic rises have also been seen in sex workers, the police, the military, STD patients and pregnant women.

The epidemic in Myanmar is one of the most serious in the region. There are an estimated half a million people with HIV in this country in 1996. The epidemic began with the infection of large numbers of injecting drug users in the late 1980s, with a prevalence of 60 to 70 percent since 1992. HIV prevalence in sex workers has steadily risen from 4.3 percent in March 1992 to 18 percent in March 1995. There is substantial geographic variability, with infection rates in pregnant women varying according to region between 0 and 12 percent in 1993. High levels of other STDs, low levels of condom use, the clandestine nature of commercial sex, and limited blood screening due to cost constraints are contributing factors to HIV spread.

In Malaysia, HIV infection levels in IDUs have grown rapidly from 0.1 percent in 1988 to 20 percent in 1994. In female sex workers, rates have gone from 0.3 percent in 1989 to 10 percent in 1994. A behavioral study conducted nationwide in 1992 found that almost one in three sexually active men and one in ten married men reported having had casual sexual contact in the previous month. Reported condom use in commercial sex is low. This implies serious potential for heterosexual transmission. The rapid growth in prevalence in IDUs and sex workers in Malaysia in the last three years is similar to that seen in Thailand and Myanmar in the early stages of their epidemics.

In Vietnam there is some evidence that the HIV epidemic is now growing rapidly. High levels have been demonstrated in IDUs in treatment (32 percent in 1992-95), and recent evidence suggests increasing levels among young men and women in the south of Vietnam. Rates in some sex worker populations rose from 9 to 38 percent between 1992 and 1994-95.

In China the majority (about 70 percent) of reported HIV infections and AIDS cases have been among IDUs in Yunnan Province. HIV infections are believed to be increasing among heterosexual populations in southern China, especially in the areas surrounding Hong Kong. The Chinese Academy of Preventive Medicine has estimated that there were 10,000 HIV-infected persons in China as of the end of 1993, growing to 100,000 by the end of 1995.

Limited HIV/AIDS data for Laos suggest that HIV transmission may be starting in the heterosexual population. Additional data are needed to confirm the beginning of an HIV epidemic in Laos.

In Bangladesh, Indonesia, Nepal and Sri Lanka the situation must be assessed based upon relatively limited testing, low rates of HIV detection in most populations, and low numbers of reported HIV and AIDS cases. These limits to our knowledge of the situation make any estimates of total prevalence or incidence quite speculative. However, most of these countries appear to have high levels of other STDs in their populations, implying a strong potential for extensive HIV spread.

In Hong Kong, Japan, Mongolia and the Republic of Korea, extensive spread has not been documented. In DPR Korea and Bhutan no AIDS cases or HIV infections have been reported, but only limited surveillance has been carried out.

In the Philippines there appears to be slower growth of the epidemic, with much lower levels (less than 1 percent) of HIV among sex workers. Early AIDS cases indicated some spread of HIV among men having sex with men. The lower number of clients and more

