Final Report

The Status and Trends of the Global HIV/AIDS Pandemic

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Table of Contents

Introduction .............................................................................................................................................. 3
Executive Summary ................................................................................................................................. 5
Global Overview ..................................................................................................................................... 10
Africa and the Middle East .................................................................................................................... 12
Asia .......................................................................................................................................................... 21
Latin America and the Caribbean ......................................................................................................... 28
North America ....................................................................................................................................... 33
Europe ..................................................................................................................................................... 36
North and South Pacific ......................................................................................................................... 43
Symposium Conclusions ....................................................................................................................... 46
Recommendations .................................................................................................................................. 56
List of Participants ................................................................................................................................. 58


Introduction


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, Page 58), 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.
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.
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. 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

The Status and Trends of the Global HIV/AIDS Pandemic
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 post-partum 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 pre-existing 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

The Status and Trends of the Global HIV/AIDS Pandemic
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 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.

Box Three

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

The Status and Trends of the Global HIV/AIDS Pandemic 23
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 indirect nature of sex work in the Philippines may help to explain the more gradual evolution of the situation.

In Singapore, infection levels in sex workers have been growing quite slowly. The rapid growth of HIV infection in sex workers seen elsewhere in the region has not been seen there, perhaps as a result of prevention efforts.

**Populations Affected**

The epidemics in Asia are predominantly spreading through heterosexual contact. On a regional basis, infected men probably outnumber infected women by a factor of 3 to 1 or more, since commercial sex clients, injecting drug users and men having sex with men have contributed most strongly to the rapid initial growth of the epidemic. This male/female ratio is expected to drop as the epidemic spreads into the general population through spread of HIV from clients of sex workers to their regular partners and spouses.

The HIV/AIDS epidemics in Asian countries have been strongly influenced by gender inequality and the frequent practice of men visiting sex workers. Since sexual expression for females is typically more limited than for males, the small population of sex workers has large numbers of clients, and consequently high rates of other STDs, which enhance HIV transmission. As a result, most epidemics begin with rapid prevalence increases in sex workers and their clients (as seen through STD clinic data). This growth can be quite explosive. Annual incidences in sex workers as high as 25 percent and in clients of almost 10 percent have been seen in India. High growth rates have also been well documented in numerous studies in Thailand and Cambodia.

Sharing of needles among injecting drug users, given its high efficacy for HIV transmission, has also played a significant role early in the epidemics, particularly in the Golden Triangle region (from Thailand and Vietnam, across southern China, to Myanmar, to Manipur) and in northern Malaysia. As the epidemics mature, transmission from sex worker clients and IDUs to their wives or girlfriends becomes the most important route of female infection, although this transmission occurs at slower rates than that between sex worker and client.

The ultimate size to which the epidemic might grow in most countries is difficult to assess because few studies of risk behaviors in the general population are available. Only Hong Kong, Malaysia, the Philippines, Singapore and Thailand have done national studies of risk behavior. Indicating that the total number of men engaging in sexual risk behavior is lower in Hong Kong, the Philippines and Singapore than in Thailand and Malaysia, these studies may help to explain the slower growth of the epidemic in those countries.

Pediatric HIV infection is also difficult to assess in this region, given the wide geographic variability in antenatal clinic infection levels. In Thailand it is now estimated that 6,400 children are infected annually, approximately 10 percent of total new HIV infections.
Impact of Prevention Programs

The extent of behavior change in the region has varied greatly from country to country. Thailand has best documented the most extensive behavioral change, the result of an active multi-sectoral national effort. In national surveys conducted in 1990 and 1993, the percentage of men visiting sex workers in the last year declined from 22 percent to 10 percent. Condom use in commercial sex transactions is now the norm. As a consequence of these behavioral changes STD rates have fallen precipitously, with reported cases dropping to one-fourth of their initial levels. Male HIV incidence is estimated to have fallen by an even greater factor. While there has been substantial success of HIV prevention in commercial sex trade, the situation in non-commercial sex remains of concern. Current levels of condom use between boyfriend/girlfriend or with other longer-term partners remains low, on the order of 10 percent. Another area in which there has been only limited success has been slowing HIV transmission within HIV-discordant married couples in which the husband is HIV-infected and the wife is not. As these women become infected, rates found in antenatal clinics continue to climb.

The slow growth of the epidemic in Singapore may largely be attributable to general awareness and programs promoting condom use at STD clinics and in brothels. It is reported that condom use by sex workers has reached fairly high levels, although commercial sex by Singapore residents traveling overseas remains an important avenue of HIV transmission.

Efforts to produce behavior change have been less effective in other countries of the region. In India, no formal studies have been done on the large-scale impact of prevention programs. From focus group discussions, however, it appears that fear of acquiring HIV has risen among the educated and the higher socioeconomic classes. This may lead to higher condom use in these populations, but this is not yet documented. Unfortunately, in the lower socioeconomic classes and rural areas there is still a gross lack of awareness and knowledge of HIV prevention methods, suggesting that behavioral change has probably been minimal. There still appears to be low use of condoms in many sex worker populations, especially among those who have many clients per day. Condors continue to be the exception rather than the rule for most premarital and extramarital sex in India. Sexually transmitted diseases continue to be a major problem in this country, a fact not well recognized prior to the HIV epidemic.

In the Philippines, behavioral surveys in 1990 and 1994 in Metro Manila have shown fairly constant levels of casual and commercial sex, implying little behavioral change during that time. The levels of condom use, while rising somewhat in Metro Manila, remain quite low. STD rates are lower than in many other countries of the region, but as mentioned earlier, are high in certain populations, including sex workers.

Myanmar and Malaysia’s effectiveness in inducing behavioral change is difficult to evaluate because no periodically collected data on risks is available there. However, extensive NGO efforts in Malaysia and grass-roots efforts in Myanmar may be reducing risk behaviors and increasing the use of condoms.

For those countries in the early stages of HIV epidemics (e.g., Bangladesh, Bhutan, Brunei Darussalam, Indonesia, Nepal, the Maldives and Sri Lanka), national efforts at HIV control have been fairly limited and major nationwide behavioral change is unlikely to have yet oc-
curred. Non-governmental organization and governmental program efforts targeted at commercial sex may have raised condom use somewhat in more heavily populated urban settings, e.g., Jakarta, Kathmandu and Colombo.

Impact of Care Programs

Because the epidemics in the region are comparatively young, many doctors fail to properly diagnose AIDS and, in addition, medical care is often difficult to access or limited in scope. As a result, what little data are available on issues of survival and the effect of care show somewhat shorter survival after diagnosis with AIDS than in the industrialized world. In one study in Thailand, median survival time after a diagnosis of AIDS was only 7 months, much shorter than in many industrialized countries, possibly because cases were only diagnosed when illness was quite advanced. In the Philippines, a small study following HIV-infected sex workers found survival times of one and a half years after the recognition that the immune system was seriously compromised. In Thailand, approximately one-fifth of children infected at birth were found to have developed AIDS after 6 months. However, the findings of these small preliminary studies can hardly be generalized. Studies of accessibility to and use of care, and its impacts on disease progression and survival are urgently needed throughout the region.

AIDS: the Eruption in Asia

It is critical to recognize the sheer numbers of people living in South and Southeast Asia, a region that contains more than 60 percent of the world’s adult population. In particular the evidence gathered in India suggests rapid, extensive and uncontrolled spread in many parts of the country. There is an urgent need for a comprehensive synthesis of the state of the epidemic in India. It is clear that there is a critical need, in this country as elsewhere in the region, to gather more credible HIV/AIDS data on rural populations.

China, too, because of its size and rapid changes in social and sexual behaviors, potentially represents a major focus of the epidemic in the region.

The different rates of spread within and between countries must be acknowledged and better understood. For example, why is the spread of HIV in the Philippines and Indonesia apparently slower than in Malaysia and Thailand? Is it related to later introduction of the virus, to lack of reliable information or differences in behavior?

Some governments (Hong Kong, Malaysia, Singapore, Thailand) have committed extensive resources to responding to the epidemic. However, the majority of governments in the region are relying heavily on external financial support to prevent epidemics occurring within their own borders. In addition, there continues to be a serious problem of denial and reticence about releasing surveillance and behavioral information by some governments in this region.
Latin America and the Caribbean region is heterogeneous and diverse, with a total of 44 countries and territories, an estimated population of 470 million people with a variety of ethnic backgrounds, and four main languages (English, Spanish, French and Portuguese). The rate of spread of HIV/AIDS has been slower than in other developing regions of the world, but the pandemic is well established and there is a wide variation in the level of HIV infection and the speed of the many epidemics among sub-regions and countries.

The dominant modes of transmission vary from one country to the next, ranging from some epidemics that are predominantly related to homo- and bisexual behaviors, to epidemics connected to injecting drug use, and to others that are primarily determined by heterosexual transmission. In spite of this epidemiological diversity, sexual transmission of HIV/AIDS accounts for 80 percent of overall transmission in the region, ranging from 64 percent in Brazil to as high as 93 percent in the Andean sub-region (Bolivia, Colombia, Ecuador, Peru, Venezuela). Although data are limited and sometimes spotty, they reflect an increasing pandemic that is progressively affecting heterosexual populations and non-urban areas.

As of June 10, 1996, Latin America and the Caribbean accounted for 26 percent (176,930) of the cumulative total of cases reported in the Americas to the Pan American Health Organization (PAHO) and 13.4 percent of the cases reported worldwide to the World Health Organization (WHO). It is estimated that 1.6 million people in the region have already been infected with HIV and that some countries are at particular risk of rapid dissemination of HIV from traditional “at-risk” groups (sex workers, men who have sex with men [MSM], men with multiple partners) and to other vulnerable groups in the general population (women, youth and children).

Sexual behaviors across the region reflect patterns that place the population at risk for HIV. These behaviors include early onset of sexual behavior, cultural acceptability of multiple partners, especially for males, and low levels of condom use. In this region, however, despite the relatively high proportion of men who have sex with other men, patterns of homo- and bi-sexual behavior are still poorly understood. Bisexual behavior is more prevalent than exclusively homosexual behavior, while self-identification with a gay lifestyle or culture is not common. Consequently, targeting messages likely to reach MSM is difficult.

The current epidemiological profile of HIV/AIDS in Latin America and the Caribbean is driven by high-risk situations favorable to a rapid spread of the HIV infection. Slowly but steadily the
pandemic is taking hold of communities rendered doubly vulnerable due to their socioeconomic disadvantage and lack of information. Migration, both between countries and from rural to urban areas, contributes to the continued spread of HIV/AIDS and creates additional challenges to HIV prevention. The epidemiological evidence signals a rapid shift of new infections to younger ages, particularly toward people between 15 and 24 years old. In addition, there are marked tendencies for HIV infection to increase among the general population and among specific populations, in particular women, children, the poor, rural communities and, generally, those who have lower socioeconomic status and those who lack access to basic educational and health services.

Mexico, The Isthmus of Central America and the Latin Caribbean

The number of new HIV infections in Mexico, the Central American Isthmus (Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica and Panama) and the Latin Caribbean (Cuba, Dominican Republic, Haiti and Puerto Rico) continues to rise. As of June 10, 1996, 60,564 cases were reported to PAHO. This represents 8.7 percent of the total number of cases reported for the Americas and 4.6 percent of the cases reported worldwide to WHO. However, the estimated “true” incidence of AIDS is substantially higher than the number of cases reported by 20 to 70 percent, with a one- to two-year lag in data collection.

There is evidence of continued increasing HIV incidence among MSM in Mexico, although the rise is not as rapid as it was in the 1980s. Transfusion-associated HIV infection and AIDS cases have drastically declined in this country as in the rest of the region due to effective blood screening. In Mexico this has resulted in an apparent slowing of AIDS cases among women, but there is, in fact, a much younger epidemic of heterosexually acquired HIV infection emerging among women. Consequently, in this country two epidemics are observed: an urban epidemic, more mature and affecting predominantly MSM and an emerging rural epidemic, which is predominantly spreading through heterosexual transmission.

The Central American Isthmus and the Latin Caribbean reflect epidemics with increasing HIV/AIDS incidence and accelerated heterosexual transmission. Honduras accounts for 57 percent of AIDS cases diagnosed in Central America, while it has only 17 percent of its population.

HIV seroprevalence levels among sex workers in Honduras have reached as high as nearly 40 percent. Sentinel surveillance of pregnant women in the city of San Pedro Sula has documented prevalence of up to 4 percent. Commerce, migration patterns and communication within this sub-region suggest that HIV is spreading within each country in well-established local epidemics and, externally, across international borders.

In the Latin Caribbean, Haiti is of particular importance because, perhaps alone in the region, it represents a case of a relatively mature epidemic. Due to social, economic and political instability, among other factors, HIV prevalence rose from 2 percent in 1989 to an estimated 5 percent of the adult population in rural areas in 1994. In urban areas the prevalence was estimated at 10 percent in 1994. HIV prevalence is particularly high among sex workers, STD
clinic attendees and tuberculosis (TB) patients. High rates of HIV prevalence found by recent studies among pregnant women aged 14 to 24 are of particular concern.

Within this sub-region, there is diversity in the structure and organization of commercial sex, ranging from informal networks to thriving sex industries. The latter involve countries from which sex workers in other countries within and outside this region originate and others that have organized sex tourism. In the Dominican Republic, HIV seroprevalence among Dominican population subsets reached levels up to 11 percent among sex workers, 5 to 8 percent among STD patients and, by 1993, 1.2 percent among women attending antenatal clinics. International and intra-regional travel, including tourism and employment seeking, also exert major influences on the dynamics of the epidemics in the Caribbean, enhancing the potential for spread of HIV.

The English-Speaking Caribbean

The predominant mode of transmission for HIV in the English-speaking Caribbean is heterosexual, but estimates of HIV transmitted through homo/bisexual contacts account for 14 percent of all new infections. Inter-country variation exists in AIDS incidence rates and in the underlying HIV infection levels but, in general, the number of cases is increasing in all countries. As of June 10, 1996, this region accounted for 4.6 percent (9,399) of the cumulative total of cases reported in the Americas to PAHO and 0.7 percent of the cases reported worldwide to WHO. The doubling time for the annual number of new AIDS cases in this sub-region is four to five years. Some Caribbean countries report AIDS incidence rates that are among the highest in the world. Among the many small countries of the Caribbean, the presence of countries with very high and very low rates of HIV incidence indicates that there are many different epidemics and not one regional pattern.

The male-to-female ratio of incident AIDS cases has fallen dramatically over the past 10 years, standing at just less than 2 men to 1 woman in 1994. Women aged 15 to 19 now have higher annual incidence rates than men of the same age. Pediatric AIDS cases have been steadily rising and now account for 5 percent of all incident cases. AIDS has become the leading cause of death among young adult men in some Caribbean countries. There is an urgent need for increased surveillance of behavioral risk factors for AIDS and HIV infection, although the small size of most Caribbean countries makes the confidentiality issue an important obstacle to data collection and analysis.

Among the heterosexual population in the Caribbean, increasing numbers of persons from marginalized groups are becoming infected, including migrant workers, sex workers and users of crack cocaine. The extremely low incidence of HIV infection through contaminated blood represents a partial success story for the Caribbean region. Available data from sentinel surveillance indicates increasing HIV prevalence rates among pregnant women, sex workers, applicants for visas to the U.S. and migrant farm workers in some Caribbean countries.
South America

The number of HIV infections and AIDS cases in South America is rising steadily. As of June 10, 1996, South America accounted for 15.5 percent (106,841) of the cumulative total of cases reported in the Americas to PAHO and 8.2 percent of the cases reported worldwide to WHO. However, as in other sub-regions, the true incidence of AIDS is believed to be substantially higher due to under reporting and difficulties in data collection. Within this specific region, Brazil accounts for 75 percent of all cases of AIDS reported to PAHO/WHO, followed by the Andean Region (15 percent) and the Southern Cone (10 percent). Sexual transmission of HIV accounts for 74 percent of all reported AIDS cases (51 percent homo/bisexual and 23 percent heterosexual), injecting drug use for 19 percent and blood and vertical transmission and undocumented cases, 7 percent.

The HIV/AIDS epidemics in the region are at differing levels of maturity, but are well established in most countries. There is considerable transmission of HIV/AIDS due to injecting drug use in Brazil (27 percent) and the Southern Cone countries of Chile, Argentina, Uruguay and Paraguay (30 percent), although recent data in Brazil suggests that the HIV transmission through injecting drug use seems to be leveling off. The pandemic in this region has progressed since the early 1980s from one predominated by homo/bisexual transmission to one with accelerated heterosexual transmission. In addition, there is an emerging transition from epidemics centered in major urban areas to increasing involvement of smaller urban centers and rural areas. Epidemics are increasingly taking hold in specific population subsets, including adolescents, marginalized communities, and others characterized by low socioeconomic status and lack of basic socioeconomic, educational and health services.

High HIV seroprevalence levels have been reported among specific South American populations: 27 percent among sex workers in Santos City, Brazil; 30 to 60 percent in several studies of urban IDUs in Brazil and Argentina, 23 percent in MSM in Rio de Janeiro, and 1 percent to 3 percent among pregnant women in Santos City, Brazil. The impact of HIV/AIDS on morbidity and mortality is already seen in major urban centers in Latin America and the Caribbean. In the city of São Paulo, Brazil, for example, AIDS deaths are now the leading cause of mortality in women of reproductive age.

Challenges for Prevention

A significant increase in knowledge, attitudes, practices and behaviors (KABP) about HIV/AIDS has occurred in the region in the past ten years. Behavior changes are most visible among sex workers, MSM and health care providers involved in AIDS management. The behavior changes observed invariably coincide with prevention interventions. However, in spite of these trends, knowledge of the relationship between HIV and AIDS and of asymptomatic transmission is still very limited in the region as a whole. Knowledge of sexually transmitted diseases and their relationship to HIV is limited, too. This is further compounded by the fact that
although awareness of HIV/AIDS has substantially increased to levels over 80 percent in many countries, there are still many misconceptions regarding the transmission of HIV through casual contact. Surveys on knowledge, attitudes, practices and behavior (KAPB) have documented the coexistence of high levels of knowledge of HIV/AIDS in many populations with myths and misconceptions, unsafe practices and low self-perception of risk.

Immediate and targeted attention to specific population subsets (women, adolescents and children) is needed as these populations are expected to become most vulnerable in the next phase of the epidemic. While attention has been given effectively to partner reduction, non-penetrative sex, and the increase and correct use of condoms, programs have not fully capitalized on and need to be complemented with realistic prevention messages addressing abstinence, delayed sexual initiation and monogamy.

In brief, as the pandemic escalates in Latin America and the Caribbean, affecting larger segments of the population, the social, economic and demographic impacts of HIV/AIDS are likely to exacerbate the burden on individuals, communities and countries, threatening the development and stability of the region as a whole. Hence, the need for continued and increased support and an expansion of HIV/AIDS prevention and control programs is critical to effectively combat the pandemic in this region.
The growth of the AIDS epidemic in North America has slowed in recent years and is approaching stable incidence, largely due to the decline in sexual transmission between men. However, current AIDS incidence is at an unacceptably high level and it must be recognized that this leveling off should in no way be considered reason for complacency. AIDS data do not reflect current HIV infections, and HIV infection continues to occur at an alarming rate in a number of sub-populations and geographic areas. The characteristics of persons with HIV infection and AIDS continue to change, reflecting the evolving patterns of transmission.

**Populations Affected**

Estimates from a statistical model show that in 1992 in the United States about 750,000 persons were living with HIV, and that year about 60,000 persons became infected with HIV. In Canada an estimated 34,000 adults were living with HIV in 1994, and 2,500 to 3,000 persons were newly infected with HIV each year in the period from 1990 to 1994. Recent estimates based on surveys of childbearing women indicate that approximately 3.2 per 10,000 children born in Canada and 15.1 per 10,000 children born in the United States carried HIV antibodies. In the U.S., an estimated 12,000 children are currently living with HIV. Since the start of the epidemic, from 1 to 1.5 million cumulative HIV infections have occurred in North America.

HIV infection has become 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 that same year, HIV infection was the third leading cause of death among 25- to 44-year-old women in the U.S.

Through December 1995, 513,486 persons had been reported with AIDS in the United States; 13,291 had been reported through March 31, 1996 in Canada. Overall AIDS incidence in North America has been slowing progressively. Although there were large increases in the number of persons annually diagnosed with AIDS-related opportunistic illnesses (AIDS-OIs) through the early 1990s, the annual increase since 1993 has been less than 5 percent. In 1995, after adjustment for delays in reporting, approximately 62,000 persons were diagnosed with AIDS-OIs (29 per 100,000 population) in the United States and 2,166 in Canada (9 per 100,000 population).

In North America, although there has been an overall slowing in the increase in AIDS incidence, there has been substantive variation in the populations affected. For example, in the
United States, the increase in AIDS incidence in the 1990s has been greatest for women compared to men, blacks and Hispanics compared to whites, and persons infected through heterosexual contact compared to those infected through other modes of transmission. As a result of these trends, AIDS incidence in 1995 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.

The HIV infection rates are also high among certain groups, such as incarcerated persons. In 1994, 2.3 percent of nearly 1 million prisoners in the United States were known to be infected with HIV, the rate of AIDS among prisoners was 7 times the rate of the non-incarcerated population, and AIDS was the second leading cause of death among prisoners. Among Canadian prisoners, HIV prevalence is higher in women, between 2 and 10 percent versus 1 to 4 percent for men; for both sexes, transmission is primarily related to injecting drug use.

In the United States, AIDS incidence among children less than 13 years of age has declined annually. For example, while there were 938 cases in 1992, there were approximately 600 cases in 1995. Only 21 Canadian children were diagnosed with AIDS in 1995. This decline may well reflect such factors as lower conception rates in women diagnosed with HIV and the possible impact of maternal and neonatal zidovudine therapy on HIV transmission.

In North America, syphilis incidence has declined, yet 1994 rates in the U.S. were 60 times greater for blacks than for whites. The incidence of gonorrhea has also declined. In 1994, the U.S. rate was 168 per 100,000 and the Canadian rate was 21 per 100,000.

Estimates from statistical models and data from several cohort studies demonstrate that HIV transmission among men who have sex with men (MSM) has declined from the very high levels of the early 1980s. In Canada, HIV incidence among MSM has dropped from about 5 to 10 percent per year in the early 1980s to an estimated 1 to 2 percent per year in the early 1990s. The HIV seroprevalence rate among MSM attending STD clinics in the U.S. fell from over 30 percent in the late 1980s to 24 percent in 1995. However, the prevalence of HIV infection among MSM remains high in almost all areas of North America.

The declining trends in HIV infection and morbidity among MSM are consistent with trends in STD surveillance data, which show large decreases in the rates of syphilis and rectal gonorrhea. These declines are also consistent with behavioral survey results, which show decreases in the number of sexual partners and other indicators of sexual risk behaviors. There does, however, appear to be some variation in the risk behaviors of younger MSM in that relatively high rates of unprotected receptive anal intercourse (30 percent to 47 percent over a 6- to 18-month period) continue to be reported by this age group.

In the United States, HIV prevalence among injecting drug users has decreased in all areas. The largest decrease has been observed in the northeast among IDUs in drug treatment programs. Anonymous testing in drug treatment centers in 29 U.S. cities from 1988 to 1995 showed higher HIV infection rates in the northeast (median HIV prevalence, 23 percent) and lower in the west (median, 1.5 percent). AIDS cases related to injecting drug use has increased less than 5 percent annually since 1993. In 1995, more than three-quarters of the injecting drug users
diagnosed with AIDS were black or Hispanic and one quarter were women. In Canada, HIV infection among IDUs is a major concern. For example, incidence in Montreal is currently estimated to be 5 per 100 person years; this rate is among the highest in North America.

Although some studies have shown a decrease in both unsafe injection practices and HIV incidence, new HIV infections continue to occur and the number of IDUs sharing injection equipment is high. Several studies have shown that 48 to 88 percent of IDUs continue to share injection equipment and that only 22 to 63 percent clean this equipment in any way. In Canada, sterile injection equipment for persons who continue to inject drugs is available in pharmacies and through numerous needle-exchange programs. In contrast, 45 of the 50 states in the United States prohibit the sale or possession of sterile needles or syringes without a medical prescription, and only a small number of legal needle exchange programs exist.

AIDS cases related to heterosexual contact represent an increasing proportion of cases in North America. Heterosexual contact is the most common mode of transmission among women diagnosed with AIDS in the U.S., and has doubled as a proportion of female AIDS cases in Canada since 1991. While a large proportion of these cases reported sexual contact with an IDU, a substantial proportion of women who acquired their infection heterosexually were unaware of their partner’s risk status. In addition to injection drug use, the use of crack cocaine in the United States has been associated with an increased risk of HIV transmission through sexual contact in both urban areas and the rural South.

Between 1990 and 1995, the average HIV prevalence among heterosexual men and women attending STD clinics in North America changed little. However, the seroprevalence rates of heterosexual men and women in New York, Miami and Washington, DC, grew by 5 percent or more.

**Changes in Behavior**

General population surveys have shown that the level of HIV/AIDS knowledge is high in North America and that changes in sexual behavior have occurred. Among adolescents in U.S. schools, the use of condoms reported at last sexual intercourse increased from 46 percent in 1991 to 54 percent in 1995. In 1992, 50 to 65 percent of Canadian adolescents reported using a condom at last sexual intercourse. A study conducted in the U.S. from 1988 to 1991 showed that condom use by heterosexual adults with non-steady partners increased from 14 percent to 22 percent among whites and from 5 percent to 27 percent among blacks. In a 1994 Canadian survey, 26 percent of men and 19 percent of women aged 20 to 45 reported using condoms with non-steady partners.
The European region counts some 850 millions inhabitants living in 50 countries. For the purpose of this analysis, this region also includes countries of central Asia that have geopolitical affinities with countries in eastern Europe. The analysis of the European AIDS epidemic reveals complex patterns and dynamics that cannot be reduced to a simple division between eastern and western Europe. However, this report uses the old political division because there are large differences in the timing and spread of the epidemic between eastern and western Europe, and the dramatic changes occurring in central and eastern Europe create specific situations of high vulnerability.

Long-Term Trends from AIDS Surveillance

By the end of 1995 a cumulative total of 160,982 AIDS cases, including 154,866 adult/adolescent cases and 6,060 pediatric cases, had been reported in the region. A total of 26,139 new AIDS cases were reported in 1995, an increase of less than 1 percent over the 25,986 cases reported in 1994.

Over the past 2 to 3 years, AIDS incidence appears to have stabilized in several countries in northwestern Europe. In contrast, there is no indication of the AIDS epidemic leveling off in countries in southwestern Europe.

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. The highest rate per million (9.9) was found in the federal Republic of Yugoslavia in 1995. However, in some countries, a rapid spread of HIV is indicated, which is mainly linked with injecting drug use. In Poland and the Federal Republic of Yugoslavia (Serbia and Montenegro), where injecting drug users 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. 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). Among the 22,494 cumulative heterosexual AIDS cases diagnosed up to December 1995, persons originating from other regions accounted for 30 percent. The shift in transmission patterns was accompanied by an increase in the proportion of female cases, which rose from 11 percent in 1986 to 20 percent in 1995. Most
women diagnosed with AIDS in 1995 were IDUs (46 percent) or had been heterosexually infected (40 percent), often by an IDU sex partner (accounting for 33 percent of non-IDU heterosexually infected women).

The epidemic among children is closely related to that among women. In most countries, the vast majority of children have been infected through mother-to-child transmission. However, in the region as a whole, 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.

**HIV Incidence and Prevalence**

In western European countries, reconstruction of past trends of HIV incidence through back calculation models usually shows that the incidence of HIV infection peaked in the mid-1980s. The same method shows a low but steady increase of HIV prevalence among heterosexual populations. Trends for IDUs appear more variable and complex. Birth cohort analysis of AIDS cases suggest that HIV transmission through injecting drug use among young adults decreased in the early 1990s in France, Italy and Switzerland, but increased over the same period in Spain and Portugal.

Among eastern European countries, large outbreaks of HIV infection in IDUs have been observed in the late 1980s in the former Republic of Yugoslavia and Poland. Until recently, HIV reporting systems associated with systematic testing of large segments of the general population had not identified increasing trends of HIV incidence. However, Ukraine recently reported a dramatic increase of newly infected IDUs in cities bordering the Black Sea. For example, the percentage of HIV-infected IDUs in Nikolayev rose from 1.7 percent in January 1995 to 56.5 percent in December, eleven months later.

Back calculations performed in western Europe in 1996 estimate that 450,000 adults were living with HIV in western Europe at the end of 1993, a figure similar to that obtained by adding national “best” estimates. There is no indication of a rapid upward or downward trend in these countries. An annual incidence of around 40,000 since the beginning of the 1990s seems a plausible estimate. In many countries of eastern Europe, which are at a very early stage of the AIDS epidemic, estimates of HIV prevalence are more uncertain. Best estimates, according to national surveillance systems, gave a total of around 18,000 cumulative infections by the end of 1993. The possibility of recent rapid increases in HIV incidence in some of these countries, as demonstrated by the 1995 Ukraine outbreak, makes any estimate of prevalence or incidence for 1995 extremely hazardous.

In countries where local data are available, the HIV prevalence in pregnant women has been much higher in urban than in rural areas (England, Scotland, Italy). The highest prevalence (between 1 and 4 per thousand) is observed in women who give birth or in newborns in the regions of Paris, Rome, Milan, London, Madrid, Barcelona and Amsterdam. In northern and eastern Europe, where data are mostly limited to the national level, the prevalence among
Rapid Spread of STDs in Eastern Europe and of HIV in Ukraine

Even as western Europe has experienced significant declines in the incidence of syphilis and gonorrhea, there has been a rapid rise of syphilis reported in several countries in eastern Europe. From 1980 to 1991, the incidence of syphilis in western Europe dropped to below 2 per 100,000; it remained stable in Poland from 1986 to 1993, but rose sharply in several Newly Independent States, starting in 1989 (see Figure 4).

Countries of the former Soviet Union have experienced dramatic increases in the incidence of syphilis from a low 5 per 100,000 in 1990 to a high 170 per 100,000 in 1995. The sharp increase in syphilis incidence prefigures the mounting vulnerability of the region to the sexual transmission of HIV.

In Ukraine, since the beginning of the HIV/AIDS epidemic in 1988, 40 to 80 new HIV infections were registered annually through extensive testing for HIV in various population groups. During the last year, however, more than 3,000 drug users have been found to be HIV-infected in Ukraine. The vulnerability of this country to the further spread of HIV is reflected in the more than tenfold increase of the number of syphilis cases between 1991 and 1995 (see Figure 6).
Figure 4.
Reported Syphilis Incidence in Eastern Europe from 1986 to 1993

Figure 5.
Number of Newly Diagnosed HIV Infections in Ukraine 1987 through 1996
pregnant women appears much lower (between 0 and 0.1 per thousand). In 1995 systematic screening for HIV did not detect any infection among women in Bulgaria, Lithuania, Moldova, Norway or the Slovak Republic.

A European network of STD clinics from 17 countries (Czech Republic, Hungary, Norway, Switzerland and countries of the European Union except Luxembourg and Ireland) has collected data on HIV prevalence among STD patients since 1990. Among the 87,640 patients tested, 2.8 percent were HIV-infected. MSM had the highest HIV infection rate in most countries (between 30 and 50 percent in Denmark, France, Germany, Portugal and Spain, and 10 percent or less in the Czech Republic, Finland, Greece, Hungary, Norway, Scotland and Sweden). In Italy, Spain and Switzerland, the highest rates of HIV infection were found in IDUs.

Among the heterosexual STD patients who were not IDUs, HIV rates were below 1 percent in 11 countries, 10 to 30 times lower than among MSM. Higher rates (between 1 and 3 percent) were found in France, Germany, Italy, Portugal, Spain and Switzerland. No significant HIV prevalence trend has been observed in this population. Available results from systematic screening of STD patients in several countries in eastern Europe have shown very low rates of HIV infection. In Russia, HIV infections were identified in only 64 of nearly 6 million tests done between January 1987 and December 1993. In 1995, 2.3 per 100,000 STD patients tested in Russia were identified as infected with HIV. However, dramatic ongoing changes in STD
incidence in these countries demonstrate a potential for a rapid change in HIV dynamics. Also in some countries of eastern Europe, where STD incidence rates are relatively low (as for example in Slovenia, where 2 early syphilis cases were reported per 100,000 population in 1995), HIV infections are already beginning to be detected among STD patients. In one of the regions of Slovenia that year, 1.4 percent of 294 STD patients tested unlinked anonymously for surveillance purposes were found to be infected with HIV.

In some countries in southwestern Europe the proportion of HIV-infected IDUs has been high for years. In Madrid, between 59 and 74 percent of IDUs entering drug treatment programs from 1986 to 1990 were found to be infected with HIV. In Italy, on a national level, HIV prevalence in IDUs was 31 percent and 39 percent in 1990 and 1991, respectively. In Poland, on a national level, the percentage of HIV-infected IDUs treated at health care settings ranged from 8.7 percent in 1988 to 2.9 percent in 1993. However, 46 percent of IDUs entering two drug treatment centers in Warsaw in 1993 were reported to be infected with HIV. In some eastern European countries, HIV infection seems not yet to have been introduced, although injecting drug use is on the rise and there is evidence of high-risk injecting behavior. In Slovenia, 80 percent of IDUs interviewed outside IDU treatment centers in 1991 admitted sharing injecting equipment during the previous year, although none of 115 unlinked anonymously tested IDUs entering methadone maintenance programs in two IDU treatment centers in 1995 tested positive for HIV infection.

**Changing Behavior**

In Europe, the lack of basic data on sexual behavior in most countries means that behavior change, condom availability and use are all difficult to monitor. A review of behavioral surveys carried out in western European countries between 1987 to 1990 shows that the reported numbers of sexual partners remained quite stable irrespective of the country, while condom use increased markedly, particularly for the most sexually active populations. Among people with casual partners, the percentage of those reporting using condoms regularly rose from 8 percent in 1987 to 48 percent in 1989 in Switzerland, and from 9 percent to 40 percent in the Netherlands during the same period. In the United Kingdom, the percentage of 18- to 24-year-olds who reported using a condom during their most recent sexual intercourse rose from 14 percent in 1986 to 31 percent in 1989. Such results, based on self-reported behaviors, are also partially supported by trends in condom sales. In Switzerland, wholesalers (representing 80 percent of the market) increased their sales from 7.6 million units in 1986 to 15 million in 1992. In France, the number of condoms sold in pharmacies and supermarkets rose from 38.6 million to 74.4 million between 1986 and 1993.

In contrast, very little is known about the condom market in central and eastern Europe. In Slovenia, condoms are available through pharmacies, petrol stations and supermarkets. In some countries, condom availability and low income levels can heavily restrict condom use. In Kazakhstan in 1995, condoms were available only in some pharmacies of Almati, the capital city. In Moscow that year, although condoms were available at most pharmacies and also could
be found in some commercial kiosks, supermarkets and hotels, the price of a twelve-unit pack represented nearly one-third of the minimum monthly salary.

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 1995, compared to 1994, syphilis incidence rates per 100,000 population rose from 81.7 to 172 in Russia (from 169.8 to 320.8 in St. Petersburg), from 72.1 to 147.1 in Belarus, from 116.6 to 173.6 in Moldova, and from 32.6 to 123 in Kazakhstan. These results indicate not only the likelihood of further spread of other STDs (including HIV infection), but also a potential for further spread to neighboring countries. This is already happening in Finland, where 118 new syphilis cases were diagnosed in 1995, as compared with 63 in 1994. Investigations have demonstrated close links between the Finnish and the Russian epidemics, through the increase of Finnish business/pleasure tourism in the St. Petersburg area, and migration from Russia to Finland.

Current and Future Trends

Transmission of HIV through injecting drug use has had and continues to play a major role in the dynamics of the epidemic in the region. Such transmission accounts 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 the same countries. The sharp rise of AIDS incidence observed since 1992 in Portugal is mainly due to a rapid increase of cases among IDUs. In eastern European countries, the more serious HIV infection outbreaks reported until now (Poland and Ukraine) are also associated with IDU.

The relative proportion of homo/bisexual men among people with AIDS has steadily decreased in the past ten years in the region. This is mainly due to a comparatively rapid progression of cases among drug users and to a low, but steady, increase in the proportion of heterosexual AIDS cases. AIDS incidence among gay men appears to be moderately declining or quite stable in most of western Europe, while still increasing in Greece, Portugal and Norway. In the Baltic States, Slovenia and Hungary, homosexual men account for the vast majority of HIV infections reported so far among males. Homosexual men represent 77 percent of the 171 HIV infections reported in Hungary in the past 5 years. In Russia, male to male sex was considered the mode of transmission in 53 percent of the 587 HIV/AIDS cases reported among adult males up to December 1994. In Slovakia and Slovenia, 1996 data from unlinked anonymous HIV serosurveys using saliva tests performed in gay gathering places showed prevalence rates of around 3 percent, indicating a potential for further spread of the HIV epidemic in that population.

Moreover, information from the United Kingdom indicates that the declining trend of male-to-male transmission noted in the late 1980s may have begun to reverse, starting in 1990. Although of great importance, the relative increase of AIDS cases and HIV infections among non-injecting-drug heterosexuals, should not mask the fact that homosexual men and IDUs continue to experience the heaviest burden of the epidemic throughout the European region.
For the purpose of this report, North and South Pacific is defined as Australia, New Zealand, Papua New Guinea, the Territories and independent island countries of the Pacific. Populations range from 18 million people in Australia to less than 10,000 in some of the island states. By the end of 1995, around 7,400 cases of AIDS had been reported in North and South Pacific, of which over 7,000 were in Australia and New Zealand.

Australia and New Zealand’s experience of the HIV epidemic has paralleled that of a number of industrialized countries, particularly those of Northern Europe. The major pathway of transmission has been through sexual contact between men, which occurred primarily in the early 1980s. This pattern also has been reflected in the French Territories of New Caledonia and French Polynesia. The HIV epidemic in Papua New Guinea has developed more recently, mostly as a result of heterosexual transmission. In a number of the small island countries in the region, HIV and AIDS cases have been reported, but populations and case numbers are really too small to define any clear patterns of transmission.

Overall, the per capita HIV prevalence and incidence of AIDS in Australia and New Zealand has been roughly in the middle of the range observed in industrialized countries in other regions of the world. Although AIDS incidence so far has been low in Papua New Guinea, it was estimated that by the end of 1994 there were 4,000 adults living with HIV infection in Papua New Guinea, overtaking Australia on a per-capita basis to give the highest prevalence in the North and South Pacific region. Some of the smaller countries of the region have relatively high rates, even though the number of reported cases is small.

**Populations Affected**

Cumulatively, over 85 percent of HIV infections in Australia and New Zealand are reported to have been acquired through sexual contact between men. In New Caledonia and French Polynesia, around two-thirds of cases with a reported mode of transmission were in men with a history of homosexual contact. Back-projection estimates from AIDS cases in Australia show that there was a peak in the homosexual transmission of HIV infection between men in the early to mid-1980s and a substantial decline in transmission rates during the latter half of the 1980s.
The incidence of AIDS has reached a plateau in Australia and actually appears to be declining in New Zealand. These patterns are essentially due to the drop in the rate of sexual transmission of HIV infection between men that occurred ten years earlier. This decline began well before any organized prevention program was implemented, but is likely to have been supported through the strong partnerships developed between gay community-based organizations and governments. Current trends in sexual transmission between men are unclear. Cohort studies, behavioral surveys and monitoring of rectal gonorrhea provide a basis for assessing changes in HIV risk.

In Australia and New Zealand, HIV has remained rare among people who inject drugs, apart from men who also have homosexual contact. In heterosexual injecting drug users, surveys have consistently found HIV prevalence below 2 percent. Both countries have adopted harm reduction policies, including extensive use of needle exchange. Although the low HIV rates indicate successful prevention efforts in this population, the transmission of hepatitis C continues to occur at epidemic levels among injecting drug users, with annual incidence rates of 15 to 20 percent being recorded in Australia. The ongoing hepatitis C epidemic indicates the continuing potential for a substantial outbreak of HIV through blood contact among injecting drug users.

On the basis of available evidence, heterosexual transmission of HIV has been infrequent in Australia and New Zealand. The pattern appears to be very different in Papua New Guinea, where heterosexual transmission accounts for the largest proportion of diagnosed infections. By the end of 1995, nearly 90 percent of the diagnosed cases of HIV in Papua New Guinea for which modes of transmission had been reported were attributed to heterosexual contact, and an equal number of males and females had been diagnosed with HIV infection.

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. Surveillance data so far indicate that the rate of HIV diagnosis is no higher among indigenous than non-indigenous people, but in Australia the rate of HIV diagnosis has increased in the past six years among indigenous people. In contrast, the overall rate of HIV diagnosis in the Australian population has declined substantially. There has also been a shift toward more heterosexually transmitted infections among the diagnoses of HIV among indigenous people in Australia.

Surveys among men who have sex with men show a substantial decline in Australia and New Zealand over the past decade in the frequency of unprotected anal intercourse with casual male sexual partners. There have also been major declines in the sharing of equipment by injecting drug users. There has been little longitudinal information on heterosexual risk behavior at a national level, but increased condom use has been reported among heterosexual university students.

**HIV Care**

Most of the need for HIV care in North and South Pacific has so far been in Australia and New Zealand. In these countries, there has generally been wide availability of good treatment services, access to appropriate therapy and a steadily improving climate in regard to discrimination. As the
burden of HIV illness increases in Papua New Guinea and possibly some of the other smaller countries of North and South Pacific, it is likely that strain will be placed on existing health infrastructures, as has been the case in other parts of the developing world.
1. Remarkable progress has been achieved in reducing the spread of HIV in some developing countries and in certain populations in industrialized countries.

Specifically, HIV incidence has declined in young men in Thailand. Impressive declines in HIV incidence and/or prevalence have been reported in gay men in the U.S., Australia, Canada and Western Europe. A decline in prevalence has also been observed in young women in Uganda, a country with one of the most mature HIV/AIDS epidemics. HIV prevalence has remained low in injecting drug users in a number of countries. In Australia, for example, major epidemics have been prevented in injecting drug users through timely prevention efforts. To a large extent, these successes in HIV reduction are attributable to education and prevention programs.

2. The HIV epidemic continues to expand in most developing countries, as well as in those European countries undergoing political stress and upheaval.

The social, economic, demographic and health impacts of the HIV epidemics are increasing in most countries. Especially dramatic is the spread of HIV in young adults, adolescents and children in developing countries. In a number of industrialized countries, the spread of HIV is increasing rapidly in minority populations. There is also continuing spread of HIV to rural areas throughout the developing world. In many countries, the proportion of infected women is now roughly equal to that of men. Globally, heterosexual transmission continues to rise.

Extensive commercial sex industries, high prevalence of sexually transmitted diseases and injecting drug use provide the potential for explosive epidemics in several countries, including Indonesia, China, and several countries in West Africa and Eastern Europe. In India, Cambodia and Myanmar, the explosion has already occurred.

3. The global pandemic is now composed of multiple epidemics in different stages of development. The characteristics of these epidemics include different viruses (HIV-1 and HIV-2),
different strains of the same virus, differences in transmission modes and differences in incidence in population subsets, including young adults.

### Box Five

#### HIV Subtypes

**Background**

- Advances in genetic technology in the 1980s made it possible to duplicate in the test tube—by a technique called polymerase chain reaction (PCR)—the RNA or DNA forms of the genetic “code” of HIV. This revolutionary application made it possible to use the genetic information to distinguish the two major types of HIV, type 1 (HIV-1) and type 2 (HIV-2), as well as different strains within each type.

- HIV-1 is more virulent than HIV-2 and is the predominant strain around the world. To date, HIV-2 is found principally in West Africa, and constitutes a small minority of infections in other parts of Africa, South America and West India.

**Applications**

- As with other typable infectious diseases, the ability to compare and distinguish specific HIV virus isolates from individuals makes it possible to track the spread of virus from person to person, country to country and region to region.
Surveillance and knowledge about the geographic extent of HIV-1 strains is important to confirm or rule out chains of transmission between individuals and to provide clues as to how the epidemic is spreading. Furthermore, the development and performance of AIDS vaccines and clinical prognosis may be affected by biological differences in the manifestations of infection with different subtypes.

**HIV-1 and HIV-2 Subtypes**

- To date, two major groups of HIV-1 exist, “M” and “O” (for outlier). The virus that causes the great majority of HIV-1 infections diagnosed and studied in the world are in the M group. The O group includes a small number of isolates discovered in Africa (with one case found recently in the U.S.). These are genetically quite distant from the M group, and consequently may not show up on some standard laboratory tests for HIV-1.

- HIV-2 is divided in the subtypes A and B, but further subtypes C through E have recently been characterized by DNA sequencing.

**Geographic Distribution**

- In the predominant M group of HIV-1, 8 subtypes—A through H—have been identified to date. Most all are found in one area or another of Africa, while in other regions of the world, certain subtypes predominate.

- In Europe, subtype B is predominant in men who have sex with men, while a variety of subtypes are found in the relatively small numbers of people infected through heterosexual contact in Europe and the countries of the former Soviet Union. Subtype B has also been noted in Indonesia, the Philippines and Taiwan.

- In India, subtype C predominates, with a small number of A and B infections. In Thailand, E predominates, while a minority of B infections occur in drug users, and this B strain has also been found in drug users in Myanmar (Burma), Malaysia and southeast China.

- In the Americas (North, South and Central), as well as in Australia, New Zealand and Japan, subtype B is most common. Subtype F occurs in Romania, and along with subtype C also is found in a small proportion of strains in Brazil.
Biological Implications

- Preliminary epidemiological work in Thailand suggests that subtype E may be more transmissible by the sexual route than subtype B, while preliminary clinical studies there suggested that subtype E infection may produce significantly lower levels of CD4+ T-cells than does infection with subtype B. Preliminary in vitro work in the U.S. suggests that subtypes C and E may more readily infect the Langerhans cells that line the sexual tract than subtype B.

- It is not known whether an AIDS vaccine designed against one subtype of HIV-1 will work to protect the vaccine recipient against other subtypes to which they may be exposed. Knowledge of which subtypes exist in which proportions in specific geographic areas will be important for designing AIDS vaccine trials and determining which antigens might need to be included in future vaccines. Simple economical techniques have been developed for collecting HIV-1 in non-infectious dried blood spots that can be mailed safely without refrigeration to laboratories capable of performing PCR and subtyping.

Research Needs and Implications

- Some countries have multiple subtypes circulating in substantial numbers, such as E and B in Thailand, A and D in Uganda, and B and C in South Africa. Prospective studies among infected persons who continue to expose themselves to HIV (e.g., sex workers and injecting drug users) would be useful to determine whether infection with one subtype provides protection against "superinfection" with another subtype. Recent data from Senegal suggest that HIV-2 infection provides partial protection from HIV-1 superinfection. If superinfection does not occur as frequently as might be expected, this would bode well for the possibility that killed, whole-virus or live, attenuated vaccines might work if they can mimic the natural immune response to HIV.
Global Distribution of HIV-1 Subtypes

A-E: HIV genetic subtypes of high prevalence in a region
a-i: HIV genetic subtypes of low prevalence in a region

Source: Joint United Nations Programme on HIV/AIDS
4.

Epidemiological surveillance is an essential early component of a country's response to HIV. In most developing countries and in Eastern Europe, surveillance and evaluation data are insufficient to monitor adequately the status and interpret the changes in trends of the HIV epidemics.

**Box Six**

**Recommendations for Collection of HIV/AIDS Surveillance Information**

As epidemics of HIV and other sexually transmitted infections (STIs) continue to evolve around the world, the need to understand more clearly the dynamics of transmission, the impact of the epidemics and the interventions designed to curtail them continues to grow. It is necessary to recognize the gaps in our knowledge, reexamine data needs, enhance the ability to interpret this information and identify the most cost-effective methodologies for gathering this data.

The guiding principle of any surveillance system should be, “Are the data being distributed and used by as broad a base of users as possible?” The HIV/AIDS surveillance system established early in the epidemic in Thailand proved invaluable, not only for the quality and scope of the data generated, but, more importantly, because the ongoing surveillance information became an integral part of the entire national response to the epidemic. This was mainly due to the widespread dissemination of the data as it was produced, which served as a powerful tool for raising the public profile of the epidemic and refining program interventions. While the costs, protocols and underlying infrastructure of the Thailand system may not be suitable for all settings, the precedent of routine dissemination of data should serve as an example for other national surveillance systems.

In order to improve our understanding of the epidemic, the following guidelines/principles should be considered:
• Adopting a minimum surveillance system for HIV/AIDS should be a key part of an initial response for any country.

• There should be more reliance on current HIV prevalence information (point prevalence) and less use of cumulative HIV numbers (period prevalence) which tend to mask the actual trends in the epidemic.

• AIDS case reporting is extremely inaccurate in most of the developing world. There is significant under-reporting, inconsistent use of case definitions and, as a result, the number of reported AIDS cases does not reflect the current status of the epidemic.

• There are three main uses for AIDS case reporting:
  1. Estimating retrospectively ("back estimating") the number of HIV infections after adjustment for reporting delays and incomplete reporting;
  2. Estimating AIDS mortality; and
  3. Determining possible burden on the health care system as well as on other aspects of society.

• Passive reporting systems to garner AIDS case data are generally inexpensive but it is now time to examine other more credible means of addressing the above issues. AIDS case reporting continues to be a valuable aspect of a minimal monitoring system. AIDS is still a powerful indicator of the morbidity and mortality of this epidemic, particularly for policy makers. When analyzed by age group over time, AIDS case analysis may provide insight into trends occurring within younger age groups.

• The goal of a serial sentinel HIV seroprevalence system is to generate a series of consistent prevalence data using a uniform methodology that samples selected populations (women attending antenatal clinics, sexually transmitted infection patients, sex workers, etc.) within both rural and urban settings.

• Even when credible serial HIV prevalence information is obtained for various representative populations, interpretation is often difficult. It is necessary to collect information on a range of additional issues. Special surveys should be utilized at appropriate intervals linking HIV seroprevalence information with:
  - Behavior change (e.g., number of sexual partners, condom use, history of sexually transmitted infections);
• STI prevalence in specific populations (e.g., sex workers, women attending antenatal clinics);
• AIDS morbidity and mortality (e.g., facility-based surveys of hospital bed utilization, use of such indicators as the number of tuberculosis cases, other possible use of vital statistics and funeral statistics);
• Fertility;
• Estimation of "epidemic saturation" of vulnerable populations;
• Evaluation of possible sampling errors (e.g., migration); and
• Assessment of social and economic determinants of vulnerability to HIV infection.

With governments assuming increasing responsibilities for supporting surveillance systems and the evolving role of both multilateral and bilateral donors, it will be critical to determine the costs and secure the necessary resources to implement HIV surveillance data gathering systems.

The following table proposes both a minimum and an advanced resource-intensive surveillance system for various stages of the epidemic. It should be acknowledged that multiple others aspects should be considered when designing surveillance systems, including:

• The size of a country;
• The type of decisions that need to be made on the basis of surveillance data; and
• The availability of structures and resources.
**Minimal and Advanced Surveillance Systems at Different Stages of HIV/AIDS Epidemics**

<table>
<thead>
<tr>
<th>Stages of the Epidemic</th>
<th>Minimal Information Needs</th>
<th>Advanced/Resource-Intensive Surveillance Systems</th>
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<tbody>
<tr>
<td><strong>Early/Slow:</strong> Few cases of AIDS, low HIV prevalence in “high-risk” groups and spread mainly in urban areas.</td>
<td>1. Serial (6 monthly) HIV prevalence focusing on selected “high-risk groups.” 2. AIDS case reporting. 3. Selected STI prevalence studies. 4. Development of baseline levels of risk behaviors.</td>
<td>Minimal package plus: Qualitative and quantitative data on social/sexual mixing, selected STI prevalence, identification of potential determinants of vulnerability to HIV infection.</td>
</tr>
<tr>
<td><strong>Middle:</strong> Increasing HIV prevalence in “high-risk” groups, low prevalence in general adult population, continued spread mainly in urban areas.</td>
<td>1. Serial (6 monthly) HIV prevalence of populations with high-risk behaviors. 2. AIDS case reporting. 3. Selected STI prevalence studies. 4. HIV prevalence in low-risk groups (e.g., women attending antenatal clinics, blood donors).</td>
<td>Above plus: Health-seeking behavior surveys, monitoring of impact of interventions, e.g., condom utilization, as well as any interventions directed toward vulnerability issues, consider population based seroprevalence studies.</td>
</tr>
<tr>
<td><strong>Late:</strong> High prevalence in populations with high-risk behaviors: increasing prevalence in general adult population.</td>
<td>1. Serial (annual) HIV prevalence of high-risk groups and population with low-risk behaviors. 2. AIDS case reporting. 3. Selected surveys of behavior change and STI prevalence coupled to #1.</td>
<td>Above plus: AIDS-related case mortality, health care utilization, increasing ability to monitor trends in gender roles, sexual negotiation, HIV subtype determination.</td>
</tr>
<tr>
<td><strong>Mature/Endemic in General Population:</strong> High (&gt;5%) HIV prevalence in general adult populations; gradual urban to rural equalization of HIV prevalence.</td>
<td>1. Serial (annual) HIV prevalence in populations with high-risk behaviors and others with low-risk behaviors. 2. AIDS case reporting. 3. Selected behavioral surveys and STI prevalence linked with epidemiologic information.</td>
<td>All of the above plus: Selected impact studies on health care and other sectors of society, evaluation of quality of facility-based care and orphan support, evaluation of discrimination.</td>
</tr>
</tbody>
</table>
5. Inadequate behavioral and social data make it difficult to interpret the apparently slower growth of epidemics in some countries, as is observed in the Philippines and Zaire. Also difficult to explain have been the recent explosive epidemics in South Africa and Botswana, as well as the rapid rise in Cambodia.

6. As the impact of the pandemic is increasingly felt, care and support for people living with HIV/AIDS continues to be grossly inadequate, especially in developing countries and among disenfranchised populations in industrialized countries.
Recommendations

1. Improvements are needed in the collection and analysis of surveillance data, including epidemiological, behavioral and socioeconomic data in order to:
   - Monitor the status and trends of the epidemics adequately; HIV prevalence data should be emphasized rather than AIDS cases; reporting should be focused on current rather than cumulative cases; surveillance systems and epidemiological studies should be capable of disaggregating data according to sex and narrow age groups in order to reveal trends occurring within the excessively broad population groups currently used to monitor HIV/AIDS and behaviors;
   - Interpret the changes in HIV/AIDS trends;
   - Detect potentially explosive epidemics in their early stages; and
   - Understand the reasons for relatively slow epidemics as well as rapid epidemics.

2. Prevention efforts should be focused on women, young adults, adolescents and marginalized communities.

3. Special attention must be given to the explosive epidemics in India, Cambodia, Myanmar and South Africa and to those countries and areas with the potential for explosive epidemics, such as Indonesia, Eastern Europe and several countries in West Africa.

4. Current successes in prevention and interventions that are known to work must be enhanced both in quality and scale to all populations at risk of HIV/AIDS.

5. Research must be done on the societal, social, behavioral and economic determinants of vulnerability to HIV/AIDS. Both strong qualitative and quantitative research methods will be needed to effectively investigate these determinants.

6. Dissemination of results at all levels is an essential component of research and surveillance.

7. Close linkages at the local, national and global levels should be strengthened and maintained among epidemiologists, behavioral scientists, public health specialists, HIV/AIDS workers and non-governmental and private voluntary organizations in order to improve prevention and care efforts and to monitor trends and evaluate program impacts.
8. The observed epidemic trends require continuous improvement of policy commitment and increased mobilization of financial resources for prevention and care efforts at the local, national and international levels.

This Final Report is the product of collective work involving all participants in the Satellite Symposium and support staff. The initial texts of short summaries that now appear as boxes throughout this report have been contributed by the following Symposium participants:

**Box 1: Mwanza STD Trial**  
*Richard Hayes*

**Box 2: Declines in HIV in Uganda**  
*Rand Stoneburner*

**Box 3: HIV/AIDS in India**  
*Shiv Lal, Manoj Jain*

**Box 4: Eastern Europe and the Ukraine**  
*Alexander Gromyko*

**Box 5: HIV Subtypes**  
*Bruce Weniger*

**Box 6: Surveillance Collection**  
*Bilali Camara, James Chin, Paul DeLay, John Kaldor, Karen Stanecki DeLay, Rand Stoneburner and Peter Way*
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