

The Status and Trends
of the
HIV/AIDS Epidemics
in the
World

**Held in conjunction with
the 12th World AIDS Conference
Veyrier du Lac, France
June 23 – 25, 1998**

**Hosted by the Marcel Mérieux Foundation
Veyrier du Lac, France**

Monitoring the AIDS Pandemic (MAP) Network

MAP is a collegial network of internationally recognized technical experts seeking to assess the status and trends of the global HIV/ AIDS pandemic. Created in 1996, MAP is jointly sponsored by its founding institutions:



Family Health International, funded by the United States Agency for International Development



The François-Xavier Bagnoud Center for Health and Human Rights of the Harvard School of Public Health



The Joint United Nations Programme on HIV/ AIDS (UNAIDS)

MAP's more than 120 members in 40 countries are epidemiologists, modelers, economists, and social, behavioral, public health and international development specialists, recruited through a nomination process and currently guided by an Interim Global Steering Committee. MAP hopes to make its greatest impact by providing objective, timely and high-quality analyses of the most current information on the pandemic, for the improvement of prevention, care and social interventions worldwide.

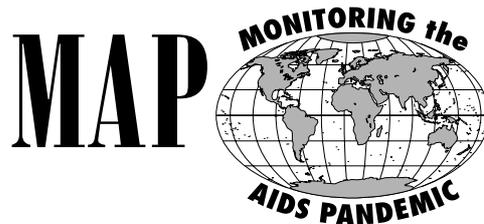
MAP workshops and membership meetings are held in conjunction with regional and international HIV/ AIDS conferences. This enables MAP to function on a small budget and to distribute results from its analyses promptly to conference participants.

AIDS service organizations and regional networks of people living with HIV/ AIDS are invited to participate in MAP workshops. MAP works towards building consensus in an atmosphere of collegiality, cultural sensitivity, and mutual respect for conflicting points of view. It functions on the basis of volunteerism and personal and institutional contributions, with limited financial support from international organizations, including UNAIDS, and provides an independent perspective on issues raised by the HIV/AIDS pandemic.

Publications and other work products arising from the work of the MAP Network are the sole responsibility of the Network. The contents of this report and other work products do not necessarily reflect the views or policies of MAP's founding and sponsoring institutions.

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Previous Reports Produced by MAP

Workshop on the Status and Trends of the HIV/ AIDS Epidemics in Africa: Final Report,
Kampala, Uganda, December 1995 (English and French).

The Status and Trends of the Global HIV/ AIDS Pandemic Final Report,
Vancouver, Canada, July 1996 (English, French, Spanish, Japanese, Chinese and Russian).

The Status and Trends of the HIV/ AIDS Epidemics in Asia and the Pacific: Final Report,
Manila, Philippines, October 1997 (English, French, Japanese).

The Status and Trends of the HIV/ AIDS Epidemics in Latin America and the Caribbean: Final Report,
Rio de Janeiro, Brazil, November 1997 (Spanish and English).

The Status and Trends of the HIV/ AIDS/ STD Epidemics in Sub-Saharan Africa: Final Report,
Abidjan, Côte d'Ivoire, December 1997 (French and English).

The Status and Trends of the HIV/ AIDS Epidemics in Eastern Europe: Final Report,
Veyrier du Lac, France, June 1998 (English, Russian version forthcoming).

The Status and Trends of the HIV/ AIDS Epidemics in the World: Final Report,
Veyrier du Lac, France, June 1998 (French version forthcoming).

MAP reports are available through the following websites:

Family Health International
<http://www.fhi.org>

François-Xavier Bagnoud Center for Health and Human Rights
<http://www.hri.ca/partners/xfbcenter>

UNAIDS
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Acknowledgments

MAP would like to express its gratitude to the Marcel Mérieux Foundation for having very graciously and generously co-hosted this symposium of the MAP Network. By extending its conference and lodging facilities at Les Pensières, Veyrier du Lac, France, the Marcel Mérieux Foundation made it possible for MAP members to meet in a wonderful working environment. MAP is grateful to the Joint United Nations Programme on HIV/ AIDS (UNAIDS) for providing the financial resources to sponsor the attendance of some of the participants and covering some of the overall local cost.

MAP wishes to express its warmest thanks to the American Foundation for AIDS Research (AmFAR) for its contribution to the production and dissemination of this report. The AmFAR support will ensure that the most current analysis of the status and trends of the HIV/ AIDS epidemics reaches those who were able to attend the XII World Conference on AIDS and, more importantly, those who were unable to do so.

MAP would also like to acknowledge the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization for their June 1998 report on the Global HIV/ AIDS Epidemic and on their production of the Epi Fact Sheets which were developed in close collaboration with colleagues from national AIDS programs from around the world. These documents served as useful resources in the preparation of this report.

This meeting included discussions on themes which were introduced through the presentation of working papers. The authors of these working papers and the editor of this report are gratefully acknowledged here:

The Global Epidemiology of HIV/ AIDS
BERNHARD SCHWARTLÄNDER

The HIV/AIDS Epidemic in Europe
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The Global Epidemiology of Sexually Transmitted Diseases
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Karen Stanecki De Lay, Bernhard Schwartländer, Daniel Tarantola, Eric van Praag,
Peter O. Way, Jacqueline Weekers and Alan Whiteside.

Thanks are also extended to
Carmen Buencamino, Johanna Van Hise Heart,
Mary Pat Kieffer, Elena Markova, and Catlin Rockman
for the active staff assistance they contributed
to the preparation of the meeting and to the production of this report.

1. Introduction

This MAP Symposium was the fifth in a continuing series of regional and global MAP “Status and Trends” symposia organized to expand the understanding of the trajectory and determinants of the HIV/AIDS pandemic. The symposium on the Status and Trends of the HIV/AIDS Epidemics in the World was held at the Mérieux Foundation, Veyrier du Lac, France, June 23-25, 1998. It preceded the 12th World AIDS Conference held in Geneva, Switzerland, June 28-July 3, 1998.

The previous Status and Trends MAP symposia contributed to focusing the international attention of policy-makers, program managers and the media on the global and regional HIV/AIDS epidemics. The MAP Status and Trends Symposium in Veyrier du Lac brought together 59 MAP members and invited participants from around the world (see list of participants in Annex). The symposium aimed at meeting the following objectives:

- present and share current knowledge on the status and trends of the HIV/AIDS epidemics in the world;
- review the various epidemiological and behavioral patterns among the HIV/AIDS epidemics and explore current critical issues;
- determine specific data needs for monitoring and forecasting the HIV/AIDS epidemics in the world and identifying gaps in the response; and
- produce and disseminate a report to participants attending the 12th World AIDS Conference and to those who, although concerned with HIV/AIDS, were unable to attend.

MAP structured its symposium agenda so as to add its analysis of specific features of the pandemic to the excellent June 1998 report on the global HIV/AIDS epidemic released by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO). As UNAIDS and WHO prepared their report in collaboration with national experts, including many MAP members, and in consultation with the MAP secretariat, it was possible to ensure

that the reports produced by UNAIDS/WHO and by MAP complemented each other.

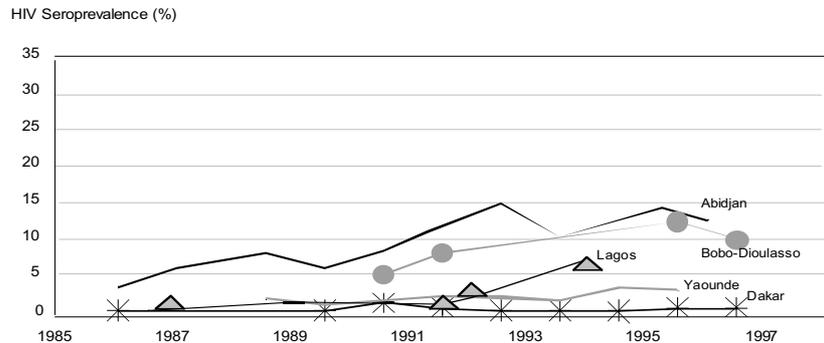
The June 1998 MAP symposium built on a series of regional MAP meetings that examined the HIV/AIDS situation in Asia and the Pacific (Manila, Philippines, October 1997), Latin America and the Caribbean (Rio de Janeiro, November 1997), sub-Saharan Africa (Abidjan, Côte d’Ivoire, December 1997), and in Eastern Europe (Veyrier du Lac, France, June 1998). Reports on these symposia have been widely distributed at regional conferences on AIDS and through the worldwide web (see web sites on page iii). The descriptive and analytical contents of these regional MAP reports fed into the present reports only in the form of brief summaries.

Co-authored by the MAP Symposium participants, the present report reflects as best it can the analysis, determinations and recommendations brought forward during the symposium. Its aim is to provide information that can be used by international, national and local bodies by reviewing the most important aspects of the evolution of the HIV/AIDS epidemics in the world, recognize the current status of and trends within these epidemics, and take action to advance the regional and global responses to these epidemics. It is hoped that the MAP report will bring into focus the multifaceted aspects of the most critical gaps in the information needed to monitor effectively the HIV/AIDS epidemics and the responses brought against them around the world.

2. The State of the HIV/AIDS Epidemic

As of mid-1998, the HIV/AIDS pandemic continues to spread unequally around the world. In many cities in sub-Saharan Africa, more than a quarter of young and middle-aged adults are infected with HIV, whereas in most developed countries, the number of annual AIDS cases continues to decrease. The status of HIV epidemics in most other areas of the world remains uncertain because of inadequate data on the prevalence of HIV-risk behaviors. This report complements the UNAIDS/WHO report on the global HIV pandemic released in June 1998.

**Figure 1a. HIV Seroprevalence for Pregnant Women
Selected Urban Areas of West and Central Africa: 1985-1997**



Note: Includes infection from HIV-1 and/or HIV-2.

Source: U.S. Bureau of the Census, HIV/AIDS Surveillance Data Base, 1998.

HIV epidemics in Africa: unabated, diverse, and complex

Around the world, 6 in every 10 adult men, 8 in every 10 adult women and more than 9 of every 10 children living with HIV live in sub-Saharan Africa. Of the estimated 16,000 new HIV infections per day, 7,500 occur in sub-Saharan Africa. Such factors as growing economic disparity, social and cultural uprooting linked to intense migration, insufficiencies in prevention and care programs, and power gaps linked to gender, age and economic differences continue to fuel HIV epidemics across the continent.

Africa is not uniformly affected by HIV/AIDS: a mosaic of epidemics is progressing with varied intensity and velocity. For example, in antenatal clinics of several cities in southern Africa, up to 45 percent of women tested during pregnancy carry HIV, a rate 10 or more times greater than in pregnant women seen at urban antenatal clinics in most countries in Central or West Africa. The use of subregional boundaries, which until recently helped in the mapping of epidemics in Africa, can be misleading. In West Africa, HIV rates in pregnant women may be 10 times higher in Abidjan, Côte d'Ivoire, than in Dakar, Senegal. (See Figures 1a and 1b.)

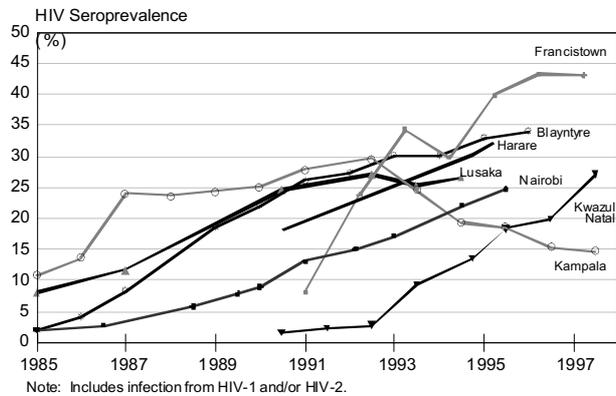
In urban areas, a much higher proportion of adults are HIV-infected than in trading sites along highways where, in turn, the prevalence of HIV is higher than in rural villages. While local migratory

and behavioral patterns have been suggested to explain these differences, the ways in which these patterns interconnect through complex social and sexual networks remain insufficiently explored.

Heterosexual contacts and mother-to-child transmission of HIV account for the vast majority of HIV infections in the region, and ongoing prevention programs must expand their reach in order to curb the spread of HIV through these routes. The information required to monitor these trends and the impact of prevention programs remains incomplete. For example, while data exist on the proportion of 15- to 49-year-old pregnant women who are infected with HIV, little is known about the levels of infection in girls younger than 15. In a community-based study near Lusaka, Zambia, 6 percent of girls aged 15-16 were found to be HIV-infected, a rate far higher than in boys of the same age. Apart from occasional and rarely published studies in the military, knowledge is also incomplete about trends of HIV in sexually active men. Among women, the dynamics of HIV infection are interpreted on the basis of prevalence rates of HIV infection (the proportion of women infected) regardless of when they acquired HIV infection. However, there is a paucity of incidence data (the proportion of women who acquire infection within a specific time period).

Anecdotal evidence supports the assertion that sex between men does occur in the region. In the absence of documented evidence that such a pattern of sexual behavior prevails, in particular in

**Figure 1b. HIV Seroprevalence for Pregnant Women
Selected Urban Areas of East and Southern Africa: 1985-1997**



single-sex male communities around industrial sites and in prisons, prevention programs are neglecting the needs of these vulnerable populations. Likewise, the rising availability of injectable substances such as heroin, especially at new transit points for drug trafficking, creates an additional risk for HIV spread in sub-Saharan Africa. The transmission of HIV infection through unscrutinized blood transfusion continues to be a concern in several countries in sub-Saharan Africa. In this region in 1995, over 2.5 million blood transfusions were administered—most of them to women and children—and of those, nearly a quarter had not been screened for HIV antibodies. Similarly, occupational exposure to HIV by health care workers has received too little attention (refer to section 6).

Asia-Pacific region

With over 60 percent of the world's population, the Asia-Pacific region presents a wide diversity of HIV-related risk environments in terms of behavioral, political and cultural factors. Within the framework of this diversity, there has also been a wide range of HIV epidemics and responses, both across and within countries. Therefore, it is not possible to present a simple analysis of the actual and potential occurrence of HIV infection in this vast region.

Our understanding of the HIV epidemic and its determinants in the Asia-Pacific region has improved substantially over the past 3-5 years, as a

number of countries have implemented comprehensive surveillance systems for HIV prevalence, as well as assessments of sexual and injecting risk behaviors. Despite these advances, a number of countries still have a limited capacity to assess the occurrence of HIV infection and related behaviors, and to monitor the impact of interventions.

A recent factor of importance in the Asia-Pacific environment has been the economic tumult of the past year. While various predictions have been made of the potential impact on the HIV epidemic, it is not possible to state with any certainty whether their net effect will be to increase or decrease the incidence of risk behavior or HIV transmission.

Since extensive HIV transmission has been a very recent phenomenon in a number of Asia-Pacific countries, there has so far been little experience with the care and support of people with HIV-related illness. Apart from Australia, Thailand and Japan, few countries have a health care workforce that is adequately prepared to care for substantial numbers of people developing HIV-related illness.

Without simplifying too much, it is possible to classify the differing patterns of HIV transmission into broad categories based on available surveillance data. In Australia and New Zealand, virtually all HIV transmission has been through sex between men, and the incidence of transmission via this route has long been recognized as having declined substantially in the 1980s. In a few

countries, such as Thailand, Cambodia and parts of Myanmar and India, heterosexual transmission has been extensive, mediated through large-scale sex industries but extending now to the regular partners of sex workers' male clients.

Some countries have HIV epidemics among injecting drug users (IDUs) with limited associated heterosexual transmission. These include countries such as Thailand, Malaysia, and Vietnam and some areas of India and China.

Other countries have limited—but well documented—spread of HIV infections, such as the Philippines, Indonesia, Japan and South Korea. Several countries have not reported substantial numbers of HIV infection, but do not appear to have comprehensive, ongoing surveillance systems. Papua New Guinea, Pakistan and Bangladesh are countries that may have a substantial risk environment and need to strengthen their surveillance activities.

The analysis of HIV epidemic trends in the region becomes more meaningful when a focus is placed on populations whose cultural and social affinity and networks transcend geopolitical borders. A new geography of HIV/AIDS in the region then emerges that helps recognize the foci of intense HIV spread. These include large metropolitan areas in western and southern India (*e.g.*, Mumbai, Chennai); the India/Nepal border area; the larger “Golden Triangle,” which reaches out to northern Thailand and eastern Myanmar but also encompasses the areas of Manipur in India and Yunnan in China; and the Mekong Delta area, which includes Cambodia and southern Vietnam. To gain better understanding of the dynamics of HIV epidemics, factors of affinity between populations as well as mobility patterns must be explored and mapped.

Are there large-scale heterosexual HIV epidemics ahead? Sudden and sharp increases in HIV incidence among persons engaged in very high-risk behaviors can and do occur in Asia. However, the lack of quantitative and qualitative epidemiological, behavioral and social information on the nature of, and linkages between, sexual networks in any of these countries rules out any reliable prediction of the future course of HIV epidemics in these countries. Recognition of the threat of emerging or fast-growing epidemics in certain populations is essential to an early and

effective response. Acknowledgement of the possibility that rapid and extensive spread of HIV may not occur in other populations equally is crucial so that policy and decision-makers may orient efforts and resources towards people who are most at risk.

India: the epidemic continues

India has a population of close to one billion, with roughly half in the most sexually active age group of 15 to 49. An estimated adult prevalence rate of about 0.6 to 1 percent in translates to 3 to 5 million infected persons, a figure higher than any other single country. However, the distribution of HIV/AIDS in India is not uniform. The epidemic is focused very sharply in a few states with most of India having extremely low rates of infection. It is noteworthy that 10 of the 31 states report 96 percent of the total AIDS cases. The major impact of the epidemic is being felt in Maharashtra in the West, Tamil Nadu and adjacent Pondichery in the South, and Manipur in the Northeast. While the epidemic is predominantly heterosexual in nature over most of India, the northeastern states have a severe epidemic among IDUs. In Manipur, intravenous drug use infection rates are now 70 percent or more.

In those parts of India where the epidemic is most firmly entrenched, the infection has spread from those groups traditionally considered most at risk, such as sex workers and patients attending sexually transmitted infection (STI) clinics, to the general population. In Maharashtra, antenatal clinics in Mumbai now report 4.5 percent prevalence, and one clinic in Pune reports over 5 percent. In Chennai between 1.2 and 2.3 percent of antenatal patients are reported to be HIV-positive. Even in Manipur, where the infection is largely focused on IDUs, antenatal clinic attendees have a prevalence rate of 1.2 percent. The sentinel surveillance reports for early 1998 have brought attention to the fact that not only is the epidemic spreading to previously less-affected groups within the severely affected states, but states that had relatively low infection rates are now beginning to have a serious problem. A case in point is the state of Andhra Pradesh, which has reported a 24 percent prevalence rate in STI patients and about one percent in antenatal clinics.

The data from India highlight the fallacy of

considering average national figures for measuring the epidemic. India clearly has areas very severely affected by the epidemic, and yet the major portion of the country has a very minor HIV/AIDS problem at this time. Unless this differential is taken into account for planning interventions, efforts are likely to be inadequate in some areas and inappropriate in others.

Data on both the distribution and the molecular epidemiology of HIV point out that HIV does not respect national or state boundaries. Thus, plans for coping with the epidemic have to be regional rather than confined to political boundaries. Clearly the epidemic in Manipur is closely linked to that in the adjacent parts of Myanmar, Bangladesh and Thailand, as the nature of the virus and the route of transmission are the same. To be effective, the interventions in these regions must also be in concert.

HIV/AIDS in Latin America and the Caribbean

The Latin America and the Caribbean region encompasses the countries and territories in the Western Hemisphere from Mexico south and east to the tip of the Southern Cone of South America. The aggregate population of the 44 countries in the region totals 476 million people, 8.4 percent of the global total of 5.7 billion people. An estimated more than 1.6 million people are living with HIV/AIDS in Latin America and the Caribbean, equivalent to 5.4 percent of the total number of people around the world living with HIV/AIDS as of January, 1998.

HIV epidemics in Latin America and the Caribbean reflect the heterogeneity of HIV epidemics worldwide: they differ from country to country and within countries. For the most part, HIV in this region is concentrated in populations living on the social and economic margins of society. HIV/AIDS has taken its greatest toll on men who have sex with men (MSM) and injecting drug users. In some places there is clear evidence of increasing spread among the impoverished and illiterate segments of society. Systematic data collection on these groups is difficult, and information is scant at present.

Rising rates in women show that heterosexual transmission is becoming more prominent. The extent to which infections in MSM and IDUs may fuel extensive spread of HIV in the heterosexual

population remains unclear. In Brazil, the male/female ratio of AIDS cases has decreased, due to the spread of HIV in women through heterosexual transmission as well as among women who are using injecting drugs. (See Figure 2 on page 6.)

Although rates in pregnant women are still comparatively low in the region in general, they have reached levels of 1 percent in Honduras and more than 3 percent in Porto Alegre, Brazil. Rates are substantially higher in the Caribbean. In Haiti, more than 8 percent of the pregnant women in the country were found to be infected with HIV in 1996.

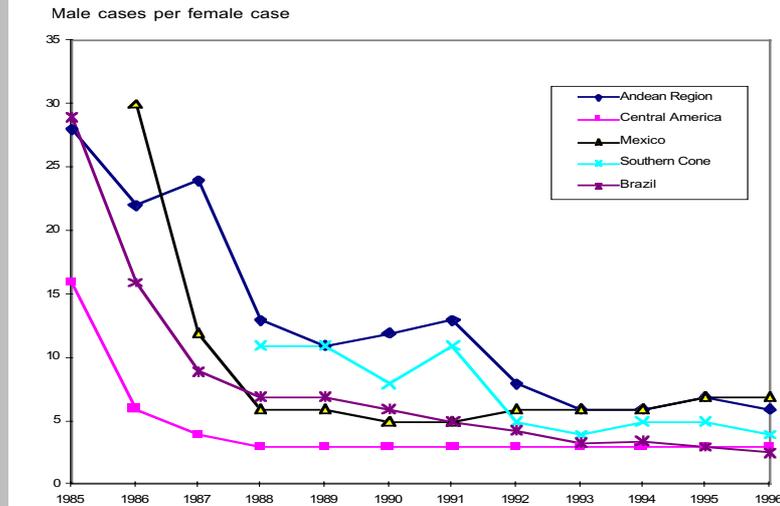
As limited as the region's HIV epidemic has been so far, AIDS already has had a major impact. In 1995, AIDS was the third leading cause of death in Mexican men between 25 and 34 years of age—and the trend is increasing. In the Brazilian state of São Paulo, AIDS has been the leading cause of death among women aged 20 to 34 since 1992.

There are, however, two reasons for hope—injecting cocaine use has decreased in some areas (including in São Paulo) and a recent drop in AIDS mortality (similar to that seen in Western Europe and North America) recorded in São Paulo is attributed to the increasing use of antiretroviral therapy.

Like other regions of the developing world, Latin America and the Caribbean encompass countries spanning the whole spectrum of development and contain highly diverse and localized epidemics with different driving forces and transmission routes. In Mexico, sex between men is the main transmission route in major cities, and drug-related transmission has begun in the northwestern part of the country; heterosexual transmission is more common along the southern border and in rural areas. Transfusion-related infections have diminished dramatically in the last eight years.

Five countries of Central America appear to have epidemics that are either in an early phase or showing slow growth. In Honduras, however, the epidemic appears to be more established. While Honduras accounts for only 17 percent of the subregion's population, it has reported more than half of the AIDS cases from Central America. Infections in this subregion are seen mainly in capitals and major cities, where commercial sex plays a role, while rural cases are related to migration. Since 1987 there has been a dramatic shift to

Figure 2. Male-female ratio of reported AIDS cases in Latin America, 1985 - 1996



heterosexual transmission and to younger population groups.

In Haiti and the Dominican Republic, HIV is spreading mostly through heterosexual intercourse. These countries have reported HIV prevalence rates among pregnant women attending antenatal clinics ranging from 1 to 9 percent, while Cuba is showing rapidly increasing infection among MSM. In the other countries of the Caribbean, a few epidemics are evident in IDUs and MSM. Heterosexual transmission, however, has been the main route since 1986, and HIV prevalence in pregnant women ranges from one to seven percent. Tourism and high population mobility characterize these island nations, and both factors can influence the spread of HIV.

The predominant mode of transmission in the five countries of the Andean area continues to be sexual contact among MSM. In general, HIV prevalence among pregnant women is less than 1 percent, although it has shown an increasing trend in the last few years. This slow increase probably reflects transmission from MSM and IDUs to their female sex partners.

A mosaic of transmission routes accounts for the more than 500,000 HIV infections currently estimated in Brazil. Transmission via MSM and IDUs has dominated so far, but there is a growing epidemic fuelled by heterosexual transmission. In urban areas, HIV prevalence in pregnant women ranges from 1 to 5 percent. Prevalence among female sex workers is around 5 percent and among

IDUs ranges from 33 to 60 percent. Overall, the epidemic is moving into younger, more impoverished and more rural populations.

The Southern Cone shows a mixed picture, but transmission occurs mainly among MSM and IDUs. The epidemics are occurring in major urban areas. Argentina reports HIV prevalence now ranging from 1 to 3 percent among pregnant women and 6 to 11 percent among female sex workers. Uruguay also shows an epidemic concentrated on MSM and IDUs with some limited spread to the general population, while Chile and Paraguay show low-grade epidemics.

HIV/AIDS in North America

Approximately 40,000 new HIV infections occur in the United States annually, over one-third in women and over two-thirds in ethnic minorities. Recent studies in STI clinics in seven United States cities showed HIV infection incidence rates in MSM ranging from 1.5 to 8.2 per 100 person years (PY), and in heterosexuals from 0.06 to 1.1 per 100 PY. In IDUs attending drug treatment centers the annual incidence was higher on the East Coast (0.9 percent, 1 percent) than on the West (0.5 percent, zero percent).

HIV incidence rates among MSM in Canada's major cities have declined from a range of 7 to 11 per 100 PY in the 1980s to 1 to 2 per 100 PY in 1995-97. There were an estimated 4,200 new HIV infections in Canada during 1996—29.5 percent among MSM, 46.9 percent among IDUs, 6.9

percent among MSM-IDUs, and 16.7 percent among heterosexuals. This estimated incidence is lower than the peak annual HIV incidence of about 5,000 to 6,000 in the mid-1980s, but higher than the estimate of 2,500 to 3,000 per year for the period 1989-94. Most of this increase in HIV infections has been in IDUs whose recent annual incidence has been as high as 6.5 per 100 PY in Montreal and 18.2 per 100 PY in Vancouver.

HIV case surveillance data represent reports of persons diagnosed with HIV infection and offer minimum estimates of the numbers of persons infected with HIV who require medical services. Despite potential lack of completeness, HIV surveillance provides a more up-to-date description of the epidemic than reported AIDS incidence, especially since the advent of more effective antiretroviral therapy.

In Canada, the percentage of new HIV diagnoses among MSM declined from 74.6 percent in the period 1985-1994 to 37.6 percent in 1997; the percentage among IDUs increased from 8.4 percent to 33.2 percent; and among women increased from 9.8 percent to 21.8 percent. In the United States, HIV surveillance data show communities of color, especially Blacks, to be disproportionately affected. Other groups in which HIV infection occurs disproportionately include women and youth, especially those of color.

An estimated 400,000 to 650,000 persons in the United States are living with HIV without AIDS-defining diseases or symptoms. The prevalence of HIV infection among MSM attending STI clinics ranges from 3.7 percent in the Midwest to 31.4 percent in Houston. Among IDUs, HIV infection is concentrated along the East Coast and in the South, with highs of 32.2 percent in Baltimore, 28.5 percent in New York City, and 25 percent in Atlanta. The overall prevalence of HIV infection in childbearing women in the United States in 1994 was 0.15 percent, the geographic distribution of infection mirroring that in IDUs and being highest along the Atlantic Coast and in the South. Extreme differences existed in the distribution of HIV infection by race/ethnicity; prevalence was 22 times higher in Blacks than Whites in New York and 16 times higher in Florida. Approximately two-thirds of infected persons in both Canada and the United States are believed to be aware of their HIV status.

By the end of 1996, an estimated 50,000 to 54,000 HIV infections had occurred in Canada cumulatively, since the beginning of the pandemic. An estimated 40,100 Canadians were living with HIV infection at the end of 1996 (including those living with AIDS). By exposure category, 63.1 percent of prevalent infections were among MSM, 4.2 percent among MSM-IDUs, 17.7 percent among IDUs, 13.7 percent among heterosexuals, and 1.3 percent among recipients of blood or blood products. HIV prevalence among IDUs has increased dramatically in many Canadian cities, *e.g.*, in Ottawa, where it increased from 10 percent in 1993 to 21 percent in 1997.

By the end of 1997, a cumulative total of 641,086 persons had been reported with AIDS in the United States, of whom 84 percent were male and 16 percent female. Of these, a total of 60,634 cases were reported in 1997, with 35 percent of adult cases among MSM, 24 percent among IDUs, and 13 percent attributed to heterosexual contact. Important recent trends include an increasing proportion of cases in women, a decreasing proportion among MSM, an increasing proportion attributable to heterosexual contact, and an increasing proportion in racial/ethnic minorities. In 1997, 45 percent of new AIDS cases were in non-Hispanic Blacks, 33 percent in non-Hispanic Whites, and 21 percent in Hispanics. The population-based incidence rates of AIDS among Black men and women in 1997 were 7 times and 20 times greater, respectively, than among Whites. Among males with AIDS, twice as many Whites as Blacks were MSM, while among Blacks, the proportion of AIDS cases resulting from injecting drug use or heterosexual exposure was 3 times greater than among Whites.

By the end of 1997, a total of 15,528 cumulative AIDS cases had been reported in Canada (approximately 20,000 after adjustment for reporting delay). The proportion of new AIDS cases attributed to MSM has steadily declined from nearly 80 percent in the 1980s to just over 50 percent in 1997. By contrast, 20 percent of adult AIDS cases were among IDUs in 1997, compared with less than 2 percent prior to 1990. The proportion of annual AIDS cases among women has increased from 4-6 percent during 1982-91 to 14 percent in 1997. Persons with IDU-associated AIDS were disproportionately of Aboriginal origin; the proportion of cases attributed to injecting drug

use in Aboriginal persons was 19 percent vs. 3.2 percent for non-Aboriginal male IDUs, and 50 percent vs. 17.4 percent for non-Aboriginal female IDUs.

The incidence of AIDS in the United States in the first nine months of 1997 was 14 percent lower than that in the same period for 1996. Better survival of persons with HIV/AIDS has resulted in an increase in the number of people living with AIDS to some 247,571 at the end of 1997. There has also been a sharp decrease in the trend in delay-adjusted AIDS cases since 1995 in Canada. (See Figure 3 on page 9.) The total number of reported deaths from AIDS in the United States in 1997 was 29,039, representing a 44 percent reduction compared with 1996. AIDS had emerged in 1993 as the leading cause of death in Americans aged 25-44 but dropped to second after unintentional injuries in 1996. HIV infection remains the leading cause of death for Black men and women of this age group but a decline in mortality has occurred in this population also.

Only 473 cases of AIDS in children were reported in the United States in 1997, of which 62 percent were Black, 13 percent White, 23 percent Hispanic, and 2 percent other or unknown groups. Between 1992 and 1996, the incidence of perinatally acquired AIDS declined by 43 percent.

The reductions in AIDS incidence and death in North America after 1995 is largely attributable to more effective antiretroviral therapy, although prevention efforts and the natural evolution of the epidemic may have also contributed. Since the duration of benefit from antiretroviral therapy is unknown, it remains essential to monitor HIV infections, AIDS incidence, and deaths to detect changing trends, should they occur. HIV case surveillance should be conducted in an integrated fashion with AIDS case surveillance, but special studies of HIV infection incidence and prevalence, especially in high-risk populations, will remain necessary. Behavioral surveillance and monitoring of access to care, adherence to therapy and resistance to antiretroviral drugs will also be required.

Trends in pediatric AIDS reflect reduced mother-to-child transmission from increased adherence to guidelines for antenatal HIV testing of pregnant women and provision of zidovudine to those infected. Elimination of pediatric HIV infection is a realistic goal for industrialized

countries, and will require HIV surveillance in women and infants, as well as monitoring of both access to, and the quality of, care.

Trends in HIV/AIDS in Canada and the United States show common themes of reduced impact in MSM but an increasing burden among women and youth, and especially in communities of color. Increasing proportions of new HIV infections and AIDS cases in Canada are IDU-associated, especially in Aboriginals. IDU-associated HIV/AIDS continues to play a central role in the epidemic affecting minorities of color in the United States.

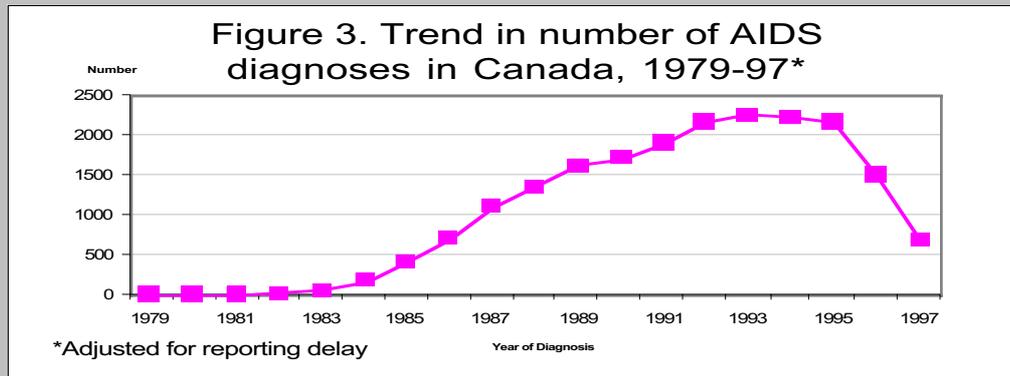
The HIV/AIDS epidemic in Europe

Following detection of the first cases of AIDS in the early 1980s, AIDS incidence in Europe increased rapidly throughout the decade, continued to rise but at decreasing rates in the early 1990s, stabilized in 1994-1995 and has declined since then. This overall trend is dominated by the trends in Western Europe that still account for over 90 percent of European AIDS cases reported each year.

These trends in AIDS incidence should be interpreted keeping in mind that infections occurred on average 10 years earlier and that HIV incidence peaked in the mid-1980s in Western Europe. However, the size and abrupt nature of the decrease since 1996 suggest that the recent and rapidly increasing uptake of new antiretroviral therapies has contributed significantly to the decline.

Although the epidemic in Europe originally occurred predominantly among MSM, the subsequent predominance of injecting drug use cases is a result of the rapid and intensive spread of HIV through injecting drug use in countries of southwestern Europe—particularly Spain, Italy and, more recently, Portugal. (See Figure 4 on page 10.)

Heterosexual contact accounts for an increasing proportion of AIDS cases (24 percent in 1997). The diffusion of HIV in the population outside these high-risk groups appears to have remained limited. HIV prevalence among pregnant women, which provides an indication of the spread of HIV among women of childbearing age, has been fairly stable over time, ranging from around 0.5 per 1000 in Berlin to 4.5 per 1000 in Barcelona. Although blood donors are selected individuals at low risk



for HIV and donor selection may have improved over time, the low and stable or even declining prevalence (less than 5 per 100,000) in blood donations in Western Europe is another indication that HIV has remained confined to the high-risk population.

Until 1995, Eastern European countries, including the Asian republics of the former Soviet Union, reported few HIV cases, mostly among homosexual men. Screening of groups such as blood donors and pregnant women and high-risk populations such as STI patients and drug users showed very low proportions infected in 1990-94.

Since 1995, HIV has spread rapidly among IDUs in cities of several countries, including Ukraine, Belarus, Moldova and the Russian Federation. Epidemics among drug users are also emerging in the Caucasus, the Baltic States, and in Kazakstan in Central Asia. More than 20,000 cases of HIV infections among drug users in these countries were reported by the end of 1997. UNAIDS and WHO estimate that the total number of HIV infections in the region may have risen from less than 30,000 in 1995 to more than 190,000 in 1997.

Although HIV rates among STI patients in the Ukraine are now growing at the same rate as they were among drug users two years ago, there is not yet any sign of a substantial spread into the general heterosexual population. HIV prevalence rates among blood donors and pregnant women have

increased, but most persons testing positive may have been drug users.

Fears of a second wave of HIV infections spread through sexual intercourse and following the current IDU-associated epidemics are aggravated by the fact that the Newly Independent States are experiencing an epidemic of classic STIs, especially syphilis. In 1997, reported rates were as high as 262 per 100,000 population in some countries in the region.

Several factors seem to have been fuelling the HIV epidemic among IDUs, including increased drug demand, supply, and consumption; widespread, local drug production; and migration. Despite shrinking resources in the Ukraine, Russia and other countries, drug treatment services and police have registered increasing numbers of drug users, with estimates of their true number reaching more than one million in Russia alone. Most IDUs use homemade opiates, but ephedrine use is also common. Local patterns vary and seem to change rapidly, with the use of synthetic drugs such as heroin and cocaine becoming increasingly widespread in major urban centers. No systematic assessment of geographical variations in drug use prevalence has been carried out.

HIV risk appears to depend on specific drug preparation and distribution patterns. Needle and syringe sharing has been reported from all categories of injecting drug users. The use of homemade opiates may be particular risky in that: a) equipment used during the preparation may be contami-

men is limited, as many men are reluctant to disclose their orientation. MSM might therefore be underrepresented among STI patients and blood donors found to be HIV-positive.

3. Migration and HIV

In some regions, migration is believed to contribute significantly to the spread of HIV. The sub-Saharan countries of South Africa, Zimbabwe, Angola and Uganda are cases in point. While only a few studies have provided reliable data on the specific factors that facilitate transmission of HIV in the context of migration, the focus of research was, and continues to be, on certain highly mobile populations such as truck drivers and itinerant traders. The role of migration in the spread of HIV therefore remains largely unknown, and as a result HIV/AIDS prevention and care programs are largely deficient in this area. (Region-specific discussions of this issue are available in previous MAP Reports.)

A migrant can be defined as someone who changes residence voluntarily, either permanently or temporarily, across a geographical or political boundary. This definition does not include refugees, internally displaced persons, and tourists—particularly sex tourists, a group that may also be contributing to the spread of HIV in many areas of the world. Using the more restrictive definition of migrant, it is estimated that in 1996 there were 2 to 4 million international migrants in the world, and 16 million internal migrants (who move within a country).

Migrants are often subject to HIV testing, which is used by many states as a criterion for exclusion or expulsion. Much attention has been given to the likelihood of migrants becoming a burden on the health and social services of receiving countries. In contrast, little effort has been made by governments toward the responsible collection of data to ensure proper attention to the health needs of migrants.

Global patterns of migration

The past 10 years have seen rapid growth of urban populations in Africa as a consequence of rural-to-urban migration. Many migrants are unaccompa-

nied young men seeking seasonal work. For example, there are currently about 350,000 people employed in the gold mines in South Africa. Approximately 95 percent are internal migrants. While few data are available on HIV rates in these populations, there is evidence of high levels of STIs.

In most of Asia, new highways, increased trade, and tourism have facilitated travel between countries. Labor-driven migration, high population mobility and the possible interaction of international tourism with the sex industry has been associated with the spread of STIs and HIV in, for example, Thailand and neighboring countries.

Most migration in South America is economically motivated, while a combination of economic migration and civil unrest has been of prime importance in Central America. For example, in both Mexico and Central America, migrants tend to flow northward, often moving toward the United States. In Mexico, 25 percent of cases of HIV infection are rural workers with a history of temporary migration to the United States. In the Caribbean, the risk of HIV spread may be more attributable to international tourism than to long-term migration.

Historically, both documented and undocumented migration have been characteristic of population movements in North America. It is therefore of particular concern that the United States has maintained and enforced an HIV testing policy for migrants in the absence of evidence that this is effective for the protection of public health.

In Europe, Eastern Europe and the Commonwealth of Independent States (CIS), economic migration, wars and the opening of internal and external borders have led to increased population mobility both within and between countries. The break-up of the USSR and the formation of independent states in the early 1990s have created a shift in migration patterns, with many CIS migrants emigrating to non-CIS countries. The degree to which this will result in the movement of HIV within these populations is still unknown.

HIV can potentially have a devastating social and economic effect on the lives of migrant communities. While HIV and STIs are only part of the larger health challenges facing migrants, policies should be developed at the national and international levels to ensure that social and health

services for migrants include components aimed at reducing the spread of STIs and HIV.

Refugees and internally displaced persons

Refugees are those who have fled their countries because of a well-founded fear of persecution for reasons of race, religion, nationality, political opinion, or membership in a particular social group, and who cannot or do not want to return. Internally displaced persons are those who have fled their homes, but remain within the borders of their own nation. It is estimated that globally in 1996, there were 22 million refugees and 30 million internally displaced persons.

The United Nations High Commissioner for Refugees (UNHCR) has estimated, for example, that there were approximately 1.3 million refugees from and in eastern African countries in 1997. These populations tend to be heavily concentrated in rural camps and holding areas. In addition, between 1989 and 1996 there were more than 900,000 refugees, 1.1 million internally displaced persons, and 4.2 million repatriates in the Commonwealth of Independent States. The vulnerability of these populations to becoming infected with HIV is high, yet few interventions to date have focused on preventing the spread of HIV among them. HIV remains low on the list of international priorities considered relevant when responding to large flows of refugees, particularly in the early, acute stages of a crisis. However, UNAIDS has produced current Best Practice guidelines that include refugee-specific recommendations.

Currently there are few effective prevention efforts for refugees and displaced persons focusing on such factors as inadequate STI treatment, lack of information and education, lack of access to HIV screening, inadequate access to condoms, unscreened blood transfusions, lack of sterile injection equipment, and inadequate diagnostic facilities.

Surveillance and research gaps

There is a lack of adequate surveillance data on the specific relation between migration and HIV.

The inclusion of migration status and ethnicity in national-level surveillance systems has traditionally been precluded for fear of stigmatization. However, where this barrier has been over-

come, active participation of migrant communities has stimulated the design and implementation of effective intervention programs. Insufficient attention has been given to the impact of gender and age differences on the risk of HIV infection for migrants, refugees, and internally displaced persons.

Data collection and analysis should help shape prevention and care programs relevant to migrants, refugees, and internally displaced persons, paying attention to needs at different stages of the migration process (*e.g.*, at the point of origin, transit, destination, and again for communities of origin in the case of return).

Recognition must be given to the heightened vulnerability of migrants in the process of data collection and analysis, and every effort must be given to ensuring that the human rights of migrants are adequately protected in this process.

4. Inequities in Care and Support for Those Infected with and Affected by HIV

As HIV/AIDS continues to spread unabated in most developing regions of the world, one of the most profound challenges manifested in this pandemic is how to care for the millions of people infected with and affected by the virus. The lack of options for care is further complicated by the lack of a dynamic response in most professionals toward the provision of care that includes medical treatment, psychosocial support services, and linkages between the clinical and home-care settings. The time when HIV-infected individuals, no matter who they are or where they live, are able to have access to fully knowledgeable, adequate and sustainable treatment and other forms of care over the potential long term is not yet in sight.

Daunted by the lack of resources and other structural impediments to organized care for HIV, many in positions of power still shy away from the topic of care. The increasing number of people in need of care globally, the limited coping capacity of health services, and the recognition that the needs go well beyond clinical therapies to psychosocial support and community-based care for the burgeoning populations of the HIV/AIDS-infected,

can and do frighten some donor agencies and governments.

Yet the right to health is a basic human right. HIV-positive individuals must be able to receive a full-spectrum of care. While rights do not lose their importance in low-resource settings, the reality is that they often are not fully protected. The mandate to protect and improve health, and to care for those in ill health is a growing dilemma around the world, especially where masses of people are infected with or affected by HIV.

Medical, nursing and social support personnel in many countries, already stressed by the burden of other common, chronic diseases of public health that are difficult to care for, are frightened by confronting HIV/AIDS. Woefully inadequate services compounded by the fear of infection can imbue these workers with judgmental attitudes, moral impunity, and lack of caring behaviors. The result is poor medical care for those with diagnosed or suspected HIV infection; comprehensive holistic treatment in these settings is not offered. In some countries, especially in east and southern Africa, the problem is exacerbated by the high percentage of health care providers in urban areas living with HIV themselves. The depletion of the medical work force results in a higher proportion of patients per health care worker in clinic and hospital settings.

Conscious of the problems encountered in hospitals, many, if not most, known or self-suspected HIV-positive individuals turn to health care providers only in the terminal stage of their illness; others choose to avoid these clinics entirely. Many do not avail themselves of voluntary counseling, early testing or preventive therapies. Many patients, particularly women and adolescent girls, fear stigmatization and community ostracization from the lack of confidentiality and so may not come forward for HIV testing or care. When denied access to these services, people living with HIV may find themselves unable to resist opportunistic infections. Limited or inexistent counseling services and in many cases lack of confidentiality provides patients with few, if any, positive psychological or emotional benefits of outpatient clinic visits. The result is overflowing hospitals, some with 60 percent of their beds in medical wards accommodating the HIV-infected or terminally ill AIDS patients. The situation is further complicated

by the lack of standardized HIV/AIDS treatment and management protocols, safety precautions, safe blood, and often other medical supplies.

Women often bear the burden of socio-economic and political inequality. HIV-positive women are likely to have less access to health care and psychosocial services than men, less free time to access what is available, and less expendable income to devote to their own comprehensive health care. Low social status, lesser educational background, and generally lower levels of self-esteem prevent many women from practicing health-seeking behavior—often they are simply unaware of their potential for HIV infection. Frequently, their families and communities expect them to put the care needs of their spouses and children ahead of their own. Attitudes toward HIV-positive women can be especially discriminatory. When it comes to HIV care and support, the lack of access to such services for women may shorten their lives and diminish the overall productivity of the community. There is a need for more data on these topics in order to formulate more responsive policies and improve programmatic planning.

Adolescent boys and girls are often confronted with a lack of care and psychosocial support appropriate to their needs, especially if they are HIV-positive. At the time of their lives when they most need the support of parents, peer groups and in some cases medical care and psychosocial support from professionals, their concerns, which may relate to their future survival, may not be taken seriously. During adolescence girls can be ridiculed for asking the type of questions that, if answered comprehensively, can save their lives. In Nepal, where more than 200,000 girls are estimated to have been trafficked to India for sex work in brothels, a growing number are returning to their home villages HIV-positive. In many of the rural areas of the country, health care is scarce; to get any treatment at all, the girls need familial support, which can in itself be difficult to access when care needs are related to HIV infection.

Underreporting of AIDS cases and HIV infections by health administrators is a large hurdle that seriously hinders the realistic design and planning of health care structures, staff and basic support systems. Analysis of caseload numbers facilitates cost estimations and can show the benefits of holistic, community-based programs

linked to hospital care. Provision of treatment, care and support must be available to all those who are HIV-positive, including the most marginalized segments of society (*e.g.*, drug users), who may not have access to health services. They need to be given the same attention as those HIV-infected individuals whose social acceptability is unquestioned. If access to care and support is measured, a real picture of the HIV situational status will emerge relative to local environments.

With the emergence of powerful but complex regimens and the evidence of feasible and affordable preventive therapies and opportunistic infection prevention, the chance to introduce holistic therapies through clinical attendance is increasing. Communities recognize that the antiretroviral therapies available to all groups in some industrialized and middle-income countries are extremely expensive and that adherence to the complicated regimens is a universal problem. The short-term side effects of many of these regimens are just starting to become known, and the long-term effects are completely unknown. Additionally, some populations are finding it difficult to return to lives that they thought they had lost; their need for psychological support during this period has grown, not lessened. More data are needed to track the positive and negative aspects of these therapies, as well as the estimated all-inclusive, long-term costs.

The flowering of some care and support programs in non-industrialized countries proves that communities can create programs to provide safety nets to those with HIV/AIDS even in the most dire economic settings. Examples of linkages of hospital and community-based HIV/AIDS care and support need examination, wide dissemination, and replication internationally. Linking clinical, community, and home-based programs by taking a participatory approach to HIV/AIDS care and support options will facilitate the betterment of both. It will also provide the type of caring and sharing that needs to be borne by and balanced among community networks at this time when individuals and families are increasingly unable to bear the burden of HIV/AIDS alone. Both access and quality of HIV care and support services need to be measured and monitored to ensure overall adequacy and sustainability.

5. Mother-to-Child HIV Transmission: The Potential Global Impact

In 1998, approximately 600,000 children will be born with HIV infection worldwide. Unfortunately, the biomedical advance demonstrating the dramatic reduction of mother-to-child transmission of HIV with zidovudine (ZDV) treatment has yet to be translated into widespread use of antiviral treatment to help prevent HIV infection in infants. The 1994 ACTG 076 clinical trial follow-up now shows a reduction of greater than 80 percent in the vertical transmission rate of HIV. However, this complex regimen may cost between US\$800 and US\$900 per woman treated, even without including other required costs of the regimen, such as voluntary counseling and testing (VCT) for HIV of the pregnant woman or formula feeding rather than breastfeeding for the infant. Primarily because of the ACTG 076 regimen's high cost and impractical logistics for resource-poor settings, where the vast majority of mother-to-child HIV transmission occurs, other options are also being pursued.

Types of intervention

Transmission of HIV from an infected woman to her offspring could be prevented in a number of ways.

For many reasons, the best way to prevent transmission would be through primary prevention, that is either by preventing the mother-to-be from becoming infected with HIV or preventing unwanted pregnancies in HIV-infected women through contraception. In addition to primary prevention, other types of potential interventions could be considered on a population basis, that is, without the need to know a particular woman's HIV status, which would require the training, infrastructure and expense of VCT programs. Potential population-based interventions could relate to those changes in obstetrical care that could minimize delivery factors that have been known to increase the likelihood of HIV, *e.g.*, minimize exposure time after rupture of membranes during childbirth.

At least two other specific types of interventions are being tested in resource-poor settings that, if successful, may not require the knowledge of the

pregnant woman's HIV status. One type of intervention is cleansing the vaginal or birth canal with chlorhexidine to reduce HIV transmission at or around the time of birth. This intervention has been tested in Malawi without success in relation to reducing transmission, but another trial is underway in Kenya. In a second type of intervention, micronutrient supplementation is given to the pregnant woman to attempt a reduction in the rate of HIV transmission. These intervention trials are primarily based on the previously observed association between maternal Vitamin A deficiency and the increased likelihood of HIV perinatal transmission. The results of these trials in at least four trials in African countries are not yet available.

Both passive and active immunizations with HIV-specific reagents are being tested in sites in North America, Europe, the Caribbean and Africa. If active immunization to either the pregnant woman or the infant proved to be effective, this could be a cost-effective approach to preventing mother to child transmission. Unfortunately the results from these initial trials are also unavailable, and further research into this approach is needed.

Antiviral intervention

As noted, at least a three-quarters reduction in vertical transmission is possible with ZDV therapy, albeit with the complicated and expensive ACTG 076 regimen. Trials with other antiviral agents as well as multi-drug trials are underway, but the costs and complexity of implementation may only increase as more antiviral agents are added.

A recent trial in Thailand looked at the contribution of oral ZDV given during the latter part of pregnancy and during delivery to the mother only. Results from the trial showed that this cheaper and shorter course of ZDV could reduce the transmission rate from mother to infant by 50 percent (when formula feeding replaced breastfeeding in the postnatal period). This important trial unfortunately did not achieve the reduction of transmission seen in the ACTG 076 trial. Some important questions, therefore, were left open, such as whether ZDV given to the pregnant woman earlier in pregnancy and/or to the newborn after delivery, would reduce the transmission rate closer to that seen in the ACTG 076 regimen. A second trial in Thailand is in progress to help answer those questions by giving oral ZDV in two

different dosing durations to a cohort of pregnant women, in addition to two different dosing durations of oral ZDV to the infants born to those mothers. Since we now know that oral ZDV is effective in this setting, this second trial will help determine the most effective oral regimen to further reduce transmission during pregnancy, delivery and during the immediate postnatal period. More research into other antiviral regimens to block transmission is a priority.

HIV and infant feeding

Unanswered are the issues and questions concerning preventing transmission of HIV via breastfeeding. Rough estimates of a 10-14 percent additional risk of transmission via breastfeeding have been given when various observational studies and estimates have been combined. When compared to the 25 to 35 percent known risk of HIV transmission during pregnancy and delivery means that perhaps a quarter to a third of all the HIV infections in infants worldwide occur via breastfeeding. As success in reducing mother to infant transmission progresses, the dilemma of postnatal transmission of HIV being balanced with optimal postnatal feeding and care will only increase. When any policy decisions concerning breastfeeding versus any other form of infant nutrition are considered, the importance of collecting local data cannot be overemphasized. The risks, affordability, nutritional quality and logistics of alternative forms of infant feeding (*e.g.*, formula feeding) are not constant or uniform throughout specific regions of the world. In addition, not only are the costs and risks of alternative infant feeding high, but this type of feeding may also be associated with social stigma. Urgent research is needed, therefore, to determine how to reduce HIV transmission via breast milk, in addition to determining safer ways to provide nutrition to infants.

An agenda for action

Translating the advances in preventing mother-to-child transmission into practice demonstrates the difficulty of translating clinical research findings into public health reality. This year UNAIDS and especially two of its cosponsoring agencies, WHO and UNICEF, have developed several guidelines and overview documents for use in the area of preventing mother-to-child transmission of HIV

and in the area of HIV and infant feeding. These documents are the result of much work and expert opinion concerning how health care decision-makers and managers could proceed with the opportunities now available. These documents are recommended as important blueprints for proceeding.

In light of the recent advances in preventing mother-to-child transmission, one must look at the positive and potentially negative outcomes of proposed interventions when concerned with future trends of the epidemic. Such parameters include infant morbidity and mortality, costs, breastfeeding rates, and adherence rates, as well as the HIV-specific outcomes of transmission rates, the impact of new maternal HIV infection diagnoses, and the development of drug resistance. In order to implement the new regimens and programs now being recommended by UN agencies, therefore, it is recommended that demonstration projects be created in a variety of epidemiological and economic settings, within which such necessary operational research could then be conducted. The hope of blocking mother-to-child transmission can only be realized in a sustainable and feasible manner by incorporating planned data gathering into the implementation of new prevention interventions.

6. HIV Transmission in the Health Care Setting

HIV and other blood-borne infections such as Hepatitis B and C and HTLV-I can be transmitted in the health care setting. Patients can be infected through transfusion of infected blood or injections or cuts with inadequately sterilized equipment, and health care workers, through percutaneous injuries with infected needles or other sharp instruments or through exposure of mucous membranes or breached skin to body fluids of infected patients. Transmission of HIV infection from infected health care workers to patients has been documented in only a few instances.

The contribution of these modes of transmission to the spread of HIV in the general population is generally very limited and as a result prevention of these infections in low-resource settings has

received little attention. Yet, it has been estimated that in Uganda 5 to 10 percent of HIV infections were attributable to transfusion of infected blood. Also, at the population level, HIV transmission in the health care setting may be a small problem, but for certain sub-populations (*i.e.*, users of health services and health care workers) the risks of transmission may be far from negligible.

HIV transmission through blood transfusion

In the United States and in Western Europe the risk of infection through blood transfusion is now extremely low, in the range of 1 in every 440,000 to 1 in every 660,000 donations. Although considerable progress has been made in developing countries since the late 1980s, provision of safe blood still is not universal or consistent. For example a study carried out in Kenya estimated the risk of HIV infection after blood transfusion at 1 in every 50 donations, although nearly 100 percent of blood bags were reported to have been screened for HIV.

Several strategies for the provision of safe blood have been proven to be effective in reducing the risk of transmission of HIV and other infections, *i.e.* Hepatitis B and C and HTLV-I. Strategies, which include avoidance of unnecessary transfusions, recruitment of low-risk donors and screening for HIV and Hepatitis B, have been shown to be feasible and cost-effective even in low resource settings. However, consistent implementation of these measures remains problematic in many areas of the world—the ultimate reason for this failure being the low priority given by policy makers and donor agencies to prevention of infections through blood transfusion.

HIV transmission through injections and cuts with inadequately sterilized equipment

There have been several reports in the literature on HIV transmission through inadequately sterilized equipment. The most widely publicized outbreaks occurred in Romania and in Russia in the late 1980s, but other outbreaks have occurred in various parts of China due to the re-use of plasmapheresis equipment. The data on this mode of transmission are virtually nonexistent for developing countries. Yet, the circumstances that led to the

Table 1. Comparison of Tanzania and U.S. studies which used similar methodologies to estimate the annual risk of occupationally acquired HIV infection.

	TANZANIA	U.S.
SETTING	9 hospitals in Mwanza Region	6 hospital emergency departments
ESTIMATED HIV PREVALENCE IN PATIENT POPULATION	20%	high: 4.1 - 8.9% low: 0.2 - 0.7%
INCIDENCE OF PERCUTANEOUS INJURY PER PERSON PER YEAR	5	0.37
ANNUAL RISK OF OCCUPATIONAL HIV INFECTION	0.27%	high: 0.026% low: 0.002%

outbreak in Russia (*i.e.*, re-utilization of disposable injection materials) are prevalent in many resource-poor settings. Failure to detect infections acquired through inadequately sterilized equipment can be attributed to poor monitoring systems (or even lack of monitoring systems) and low awareness of the problem.

Occupational HIV transmission

In industrialized countries the reported numbers of health workers infected through this mode of transmission are very small compared to the numbers of HIV infections in other transmission categories. For instance, by June 1996, the United States Centers for Disease Control had reported only 51 documented cases and 108 possible cases of occupationally acquired HIV infection.

As for developing countries, a few studies have attempted to document the risk of occupational exposure by comparing HIV prevalence rates in different categories of health services employees. These studies did not find a significantly increased risk of HIV-infection associated with patient contact, suggesting that the proportion of HIV-positive health care workers who acquired their infection through occupational exposure is rather small. However this does not mean that the

risk of occupationally acquired HIV infection is negligible. A study in Tanzania estimated this risk among health care workers in district hospitals at 0.27 percent per year. In the same region, during the same year the incidence of HIV infection in the general population was 0.95 percent. (See Table 1.)

In resource-poor settings, especially settings with a severe HIV/AIDS epidemic, the risk of occupationally acquired HIV infection can be expected to be several factors higher than in industrialized countries. Prevalence rates of HIV infection among hospitalized patients of over 20 percent, which was the rate used in the Tanzanian study, are not at all exceptional in hospitals in sub-Saharan Africa. The study in Tanzania also brought out an extremely high incidence of percutaneous injuries, *i.e.*, 5 per health care worker per year.

Failure to ensure safe working conditions for health providers in developing countries is part of a general pattern of failure to address the welfare of people working in health services. Remuneration of health workers is generally low and investments in safety precautions assume low priority where resources for health are scarce. Yet health care workers, especially in settings with severe HIV/AIDS epidemics, are a valuable asset and their

HIV infection through occupational exposure: How big is the problem?

The average risk of HIV infection to a health care worker after percutaneous exposure to HIV is estimated at 0.3 percent (compared to a 0.1 percent probability of male-to-female transmission during sexual intercourse). Risk factors associated with an increased risk of transmission include injury with a large bore needle, deep injury, visible blood on the device, a procedure involving a needle in an artery or vein, and advanced disease in the source patient.

Data on numbers of health care workers infected through occupational exposure are available for a number of industrialized countries, including:

UNITED STATES: By June 1996 CDC had reports of 51 documented cases and 108 possible cases of HIV infection after occupational exposure.

FRANCE: By early 1995 there were 10 proven cases and 27 possible cases reported.

There are no hard data on numbers of health care workers infected through occupational exposure in developing countries, although some data do exist:

A study in nine hospitals in Mwanza Region, Tanzania, found an average of 9.5 percent prick incidents per week. This gave an incidence of five prick accidents per year per health care worker. With an estimated HIV prevalence among patients of 20 percent and a transmission probability of 0.25 percent this would give an incidence of HIV infection through occupational exposure of 0.27 percent per year. Around the time this study was conducted the incidence of HIV infection in the general adult population was 0.95 percent in the rural areas and 1.2 percent in Mwanza town.

In some areas in sub-Saharan Africa, where up to 50 percent of hospital beds are occupied by HIV/AIDS patients, the risk of infection through occupational exposure may be much higher than reported in this study.

In comparison, a study in six hospital emergency departments in the United States found an incidence of 0.37 percent percutaneous injury per person per year and an annual risk of occupational HIV infection of .002-8.9 percent.

Although no direct measures are available of the magnitude of the problem of HIV infection through occupational exposure in developing countries, the few estimates that are available give reason for concern. The study in Tanzania showed a worrying high incidence of percutaneous injury, which was explained by insufficient staff training, inadequate equipment, and poor waste disposal—a situation that may be found in most resource-poor settings.

anxieties and frustrations may have a negative impact on the quality of patient care.

A call for urgent action

HIV transmission in health services in developing countries is a neglected problem. Interventions to prevent these infections will not have a measurable impact on the spread of HIV in the general population, but they have to be considered part and parcel

of the provision of high-quality care. Inequity in access to antiretroviral therapy is now—rightly—in the center of heated debates. It is high time we also address the issue of inequity in the prevention of HIV infection in health care settings. If not, we may soon face absurd situations where we provide expensive treatments to increasing numbers of people who acquire HIV infection through the health care setting because of our inability to

ensure a safe blood supply or provide adequate universal precautions.

What needs to be done? First of all we need more and better data on blood safety, patient-to-patient transmission and occupational exposure. It may not always be feasible to set up sophisticated systems for surveillance of infections acquired through these transmission routes, but systems for the monitoring of procedures ought to be within the reach of most health services. Monitoring morbidity and mortality among health care workers should be quite straightforward and affordable, even in resource-poor settings.

With regard to blood transfusion safety, we basically know what needs to be done but policy makers and funding agencies need to be convinced of the necessity to allocate resources for the provision of safe blood on a consistent basis. Prevention of HIV transmission to health care personnel, whether through sex or occupational exposure, should be part of a comprehensive prevention strategy. Other pressing problems in the health care setting include transmission of Hepatitis B and C, both of which are preventable with

improved universal precautions and a safe blood supply.

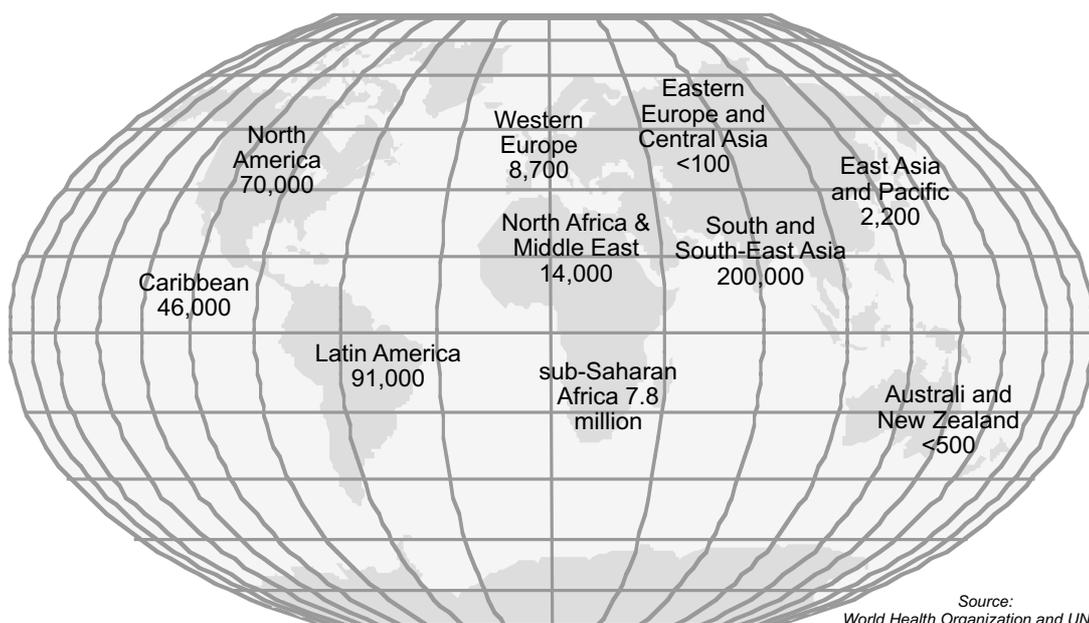
7. Orphans

It is generally accepted that children born to HIV-infected mothers have about a 33 percent chance of being infected through maternal transmission. This means that two-thirds will not be infected. However, given that the incubation period is approximately 6-8 years, those children not infected will be orphaned. Orphans continue to be considered orphans until they reach the age of 15. The importance of orphaning resulting from the epidemic has not been fully appreciated nor planned for, although there has been some consideration of this in certain countries and from certain agencies.

Alternative estimates on the numbers of orphans and likely future trends raise a number of critical issues. Current estimates suggest that the number of orphans resulting from AIDS mortality is far in excess of the number of other types of

Figure 5. Cumulative number of children estimated to have been orphaned by AIDS* at age 14 or younger

TOTAL : 8.2 MILLION



Source:
World Health Organization and UNAIDS

* HIV-negative children who have lost their mother or both parents to AIDS before the age of 15

Orphans: A Looming Crisis

Already more than eight million children have been orphaned by AIDS in sub-Saharan Africa. It is projected that there will be three million orphans in South Africa in the next 10 years. This issue was the focus of the *Raising the Orphan Generation Conference* held in June 1998 in Pietermaritzburg.

In this conference, a number of orphan estimates were presented. The reported number of orphaned children under 18 years of age in Tanzania was 6 percent in 1991. In the Rakai district in Uganda it was 26 percent. In Manicaland Province of Zimbabwe, 6.4 percent of children under 14 years of age had been orphaned by 1991, and in Zambia, 17 percent of children under 16 had lost their mothers by 1996. A 1994 survey in the KwaZulu-Natal Midlands region in South Africa showed that 6 percent of children under 16 had lost their mothers (due to various causes, including AIDS).

The Children in Distress Project has prepared estimated numbers of orphans through 2001 in KwaZulu-Natal. The numbers, shown below, indicate 150,000 cumulative orphans in 1998 and over 300,000 by 2001 (Source: CINDI Website).

It is clear that AIDS will continue to orphan many thousands of children in KwaZulu-Natal. The state, the society and the community are in no way prepared for the care and support that will need to be extended to these children. AZT treatment will reduce the number of pediatric AIDS cases, at an estimated cost of \$380 per patient, but will also serve to increase the number of orphans.

orphans and is expected to increase rapidly in the near future. UNAIDS estimates that already over 8 million children have lost their mothers as a result of AIDS. (See Figure 5.) As the peak in the incidence of orphaning will occur only after the peak in AIDS cases is past, the orphan issue is bound to be a long-term one, requiring increased attention and long-term solutions.

Furthermore, most analyses have not addressed the fact that estimates of the number of orphans attributable to AIDS are in addition to the number attributable to non-AIDS causes. This means that whatever the magnitude of orphans as a result of AIDS, the real problem will be much greater. Technical difficulties also limit most analyses to estimating only the number of children whose mothers have died. Some research has shown that the total number of orphans may be 2 to 3 times the number of maternal orphans.

Orphanhood affects children in a variety of ways, including loss of family and identity, psychosocial distress, increased malnutrition, loss of health care (including immunization), increased demands for labor, fewer opportunities for schooling and education, loss of inheritance, forced migration, homelessness, vagrancy, starvation, crime, exposure to HIV infection, exploitation and exposure to violence. There are also gender differentials in impact.

Based on recent estimation efforts, the number of orphans created by current epidemics is reasonably well known. What is not known are the age patterns, gender differences, or the situation of these orphans in the households and communities in which they live.

The number of orphans in countries with severe HIV/AIDS epidemics is already straining the ability of extended families and communities to absorb and provide for these children's needs. It is unclear how much coping can be expected of families and communities. How much of the inevitable gap in support will be taken up by the state? And what can civil society, with the support of government and the international community, do to help? These are questions that must be faced in the next decade, and there are no easy answers.

In the countries of Eastern Europe and the CIS the numbers of AIDS cases (and hence orphans) may be small in absolute numbers, but may represent a significant increase in percentage terms.

In addition, the effects may be exacerbated in this region, as there is a history here of relying on the state for support and the capacity of the current state system to provide care is decreasing. Some examples of innovative community response include selected programs in Uganda, the Child-Headed Household program in Zimbabwe, and programs in Zambia. Despite these examples of effective programs, none have been replicated (even nationwide), nor has there been any attempt to document Best Practices for global application.

Directions for action

There is an urgent need for information on what has worked and what has not in terms of care and support for affected children in diverse cultural settings. Best practices need to be identified for use by communities and program planners.

Additional research on the circumstances of orphans must be undertaken, including studies of their characteristics and circumstances and the differential impact of maternal, paternal and double orphaning.

Policy makers should ensure policies and programs address the different needs of girls and boys, as well as adolescents versus younger children.

Governments and communities should incorporate the care and support offered by traditional institutions (religious, social and grassroots) into their overall program planning.

Finally, all those involved need to recognize the rights of children: their voices must to be heard, considered and given due weight in determining their care and support needs.

8. Interactions between TB and HIV Programs

From 30 to 70 percent of young adults in developing countries are infected with *Mycobacterium tuberculosis* (TB), although most will not develop disease. HIV infection is the single strongest risk factor for progression from primary as well as latent infection to active disease, so in areas of the developing world that have a high prevalence of HIV infection, rates of TB are rising. Of the 15.3 million people estimated to be infected

with HIV and *M. tuberculosis* at the end of 1997, 11.7 million (76 percent) live in sub-Saharan Africa. An estimated 7.4 million TB cases occurred in 1996. Three countries, India, China, and Indonesia, account for half of the annual world total of TB. (See Table 2 on page 22.) WHO has refined and promoted a strategy for TB control, the DOTS (Directly Observed Therapy - Short Course) strategy, which is more likely than other approaches to result in high rates of cure and avoidance of drug resistance. (See Table 3 on page 23.)

Although patients with HIV-associated TB mostly have typical clinical patterns, their frequency of atypical manifestations is increased, making diagnosis more difficult. Recurrence rates may be higher than in HIV-negative persons through relapse or re-infection. Drug resistant TB has been associated with HIV, particularly in the United States, where HIV-associated TB may occur in the context of other factors that decrease access to health care such as intravenous drug use and migration. Drug reactions, particularly skin eruptions, are more common in people living with HIV/AIDS, notably to thiacetazone, which may lead to life-threatening reactions. *M. tuberculosis* also enhances the replication of HIV, leading to higher viral levels and possibly to more rapid progression of HIV disease in people living with HIV/AIDS who develop TB compared to those who do not. The following are the main impacts of HIV on TB control programs:

- **Increased burden:** From 5 to 10 percent of dually infected adults will develop TB each year. If HIV seroprevalence rises as high as 10 percent of the adult population, 100 to 200 new cases of HIV-related TB can be expected per 100,000 total population. In most countries, this will represent at least a twofold increase in numbers of cases, with urban areas being most heavily affected.
- **Diagnosis:** In addition to the effect that the increased burden has on diagnosis, it is also more difficult to diagnose individual cases. Furthermore, HIV causes several other pulmonary problems that may be misdiagnosed as TB.
- **Treatment:** The advent of highly active anti-retroviral therapy (HAART) may cause problems of drug interactions in the few who are able to afford this treatment; the protease inhibitors are

contraindicated while taking rifampicin. TB programs are increasingly faced by patients with other medical problems associated with HIV.

- Mortality and morbidity: Even in programs that use the DOTS strategy, mortality in HIV-

positive patients is high, mostly from other manifestations of HIV disease. This leads both to loss of the community's confidence in the program as well as to deterioration in health care staff morale.

Adherence to therapy and follow-up may be threatened by other medical and social problems

Table 2. Estimated incidence of TB: Top 22 countries, 1996

RANK	COUNTRY	POPULATION X 1000 (1996)	ESTIMATED INCIDENCE ALL CASES		ESTIMATED INCIDENCE SS+ CASES		CUM. BURDEN
			NO.	RATE	NO.	RATE	
1	INDIA	944,580	2,078,000	220	935,000	99	28
2	CHINA	1,232,083	1,047,000	85	471,000	38	43
3	INDONESIA	201,282	443,000	220	199,000	99	49
4	BANGLADESH	120,073	264,000	220	119,000	99	52
5	NIGERIA	115,020	255,000	222	115,000	100	56
6	PAKISTAN	139,973	210,000	150	94,000	68	59
7	PHILIPPINES	69,282	194,000	280	87,000	126	61
8	CONGO (DEM. REP. OF)	46,812	156,000	333	70,000	150	63
9	RUSSIAN FED.	148,126	147,000	99	66,000	45	65
10	BRAZIL	161,087	129,000	80	58,000	36	67
11	VIET NAM	75,181	125,000	166	56,000	75	69
12	SOUTH AFRICA	42,393	106,000	250	48,000	113	70
13	THAILAND	58,703	102,000	173	46,000	78	72
14	ETHIOPIA	58,243	90,000	155	41,000	70	73
15	MYANMAR	45,922	87,000	189	39,000	85	74
16	UGANDA	20,256	61,000	300	27,000	135	75
17	PERU	23,944	60,000	250	27,000	113	76
18	IRAN (ISL. REP. OF)	69,975	58,000	83	26,000	37	77
19	AFGHANISTAN	20,883	58,000	275	26,000	125	77
20	TANZANIA (UNIT. REP. OF)	30,799	58,000	187	26,000	84	78
21	SUDAN	27,291	58,000	211	26,000	95	79
22	MEXICO	92,718	56,000	60	25,000	27	80

Table 3. Categories of countries in 1996

WHO REGIONS	NO. OF COUNTRIES	COUNTRIES REPORTING		NO. OF COUNTRIES IN CATEGORIES BY 31 DECEMBER, 1996					
		No.	% OF TOTAL	0	1	2	3	4	5
AFRICA	47	37	78.7	10	9	0	9	19	0
AMERICA	44	34	77.3	11	15	0	0	14	5
EASTERN MEDITERRANEAN	23	21	91.3	2	9	3	2	4	3
EUROPE	52	50	96.2	2	29	2	4	9	6
SOUTH EAST ASIA	10	9	90.0	1	0	3	3	3	0
WEST PACIFIC	36	30	83.3	9	7	2	5	14	2
GLOBAL	212	181	85.4	35	69	10	23	63	16

***CATEGORY DEFINITIONS:**

- 0:** Has not reported to WHO on TB control activities
- 1:** Does not accept WHO "standard" TB control strategy, has a case notification rate of < 10 per 100,000 population
- 2:** Accepts WHO "standard" TB control strategy, has < 10% coverage
- 3:** Accepts WHO "standard" TB control strategy, has 10-90% coverage
- 4:** Accepts WHO "standard" TB control strategy, has > 90% coverage

affecting HIV-infected patients.

- **Stigma:** The association of TB with HIV is widely recognized in communities bearing the brunt of the dual epidemic and HIV remains a highly stigmatizing infection. Some patients may choose not to attend health facilities through fear of being diagnosed with TB and, by association, with HIV. Misconceptions about TB and HIV also lead some health care workers to worry about the risk of acquiring HIV from their patients. Other staff may discriminate against TB patients, perceiving them to be less deserving of care through association with HIV infection.
- **Nosocomial and institutional transmission:** The high HIV seroprevalence among patients facilitates the spread of TB. As the HIV prevalence rises in the general population, institutional transmission also becomes a serious concern for those working in health care facilities or living in crowded surroundings in other institutions such as prisons, mines or barracks.

In summary, HIV has adversely affected TB control programs both directly, through increases in caseloads and more difficult diagnosis, and indirectly, through its effect on health-seeking behavior and interaction between patient and health service provider. The control of TB in areas with a high prevalence of HIV infection is therefore, to a considerable degree, dependent on the success of the HIV control program.

Impact of TB on HIV control programs

Since TB is one of the most common complications of HIV infection and is eminently treatable, accurate diagnosis and effective treatment of TB should be two of the most important components of any HIV care program. As prophylaxis against opportunistic infections becomes more widely sought by HIV-infected persons in developing countries, preventive therapy for tuberculosis in HIV-infected persons will become increasingly discussed. Although prevention of TB in people

living with HIV/AIDS who have not yet developed active TB has been demonstrated in clinical trials, there are operational challenges to ensuring that patients with active TB are not given preventive therapy when they need full treatment. Failure to exclude active disease will result in inappropriate monotherapy and lead to the development of drug resistance. TB programs have a well-developed strategy that is integrated into provincial and district hospitals and urban and rural health centers. This strategy ensures delivery of care to TB patients and monitors outcome. In contrast, strategies for care of patients with HIV-related illnesses are at an earlier stage of development in most developing countries.

TB patients are also an easily identifiable group that has a higher prevalence of HIV infection than the general population. They are, therefore, a suitable target for interventions to reduce further transmission of HIV, and, when possible, biomedical interventions to prevent or treat other HIV-associated problems. In summary, TB diagnosis and treatment are vital components of any HIV care program.

The potential synergy of TB and HIV programs

There are considerable opportunities for synergy between TB and HIV programs. Health sector reform is bringing decentralization and increasing district-level autonomy to many countries and should be viewed as an opportunity to enhance the concerted management of the dual epidemics. Possible actions include training, community care, Information, Education, Communication (IEC) manuals and guidelines, advocacy, surveillance, collaboration with NGOs, and social mobilization.

Continuing expansion of the DOTS strategy is needed to control the global burden of TB. In areas of high HIV prevalence, the control of TB is, to a considerable degree, dependent on the success of HIV control programs. TB diagnosis and treatment should be vital components of HIV care programs, and HIV care must be included in TB programs. Because it is also possible to prevent some cases of TB in people living with HIV/AIDS who have not yet developed active TB, preventive therapy should be included in their package of care. Although both TB and HIV programs are aware of the ongoing disaster, neither has taken sufficient action, largely because they are already stretched to the limit with

priority activities for their specific infection. The challenge is to harness the capacity of both programs and their partners—the communities they serve and the NGOs involved—in order to minimize the impact of the dual epidemics.

9. The Global Map of Neglected Behaviors: Gaps in Knowledge and Action

As the 21st century approaches, we are discovering that the global HIV pandemic is far worse than we had thought. Furthermore, as the growth of the HIV pandemic is outpacing the mobilization of resources, prevention efforts must become more focused, more inclusive of the full spectrum of those with risk behavior and more efficient and effective.

Effective global and local responses require good behavioral information, so that resources can be directed where they will have the greatest impact and more effective prevention alternatives can be chosen. However, our knowledge of risk behaviors is still severely limited in most of the countries in the world. This drastically limits our ability to effectively target, focus and evaluate the responses; mobilize and efficiently use resources; and build political commitment.

Major knowledge gaps in targeting and focusing the responses

HIV epidemics are complex in any country. They often consist of large numbers of sub-epidemics in different populations tied together through complex behavioral networks. An effective national program must understand this complexity and develop appropriately complex solutions. Effective strategic planning for prevention creates demands for behavioral data, including consideration of the extent of risk in populations as a whole, as well as the respective size of various populations particularly vulnerable to HIV.

The levels and forms of risk behavior must be assessed in order to understand the potential impact of widespread HIV transmission; monitor large-scale changes in behavior; and determine the magnitude of ongoing prevention needs. The primary method for obtaining this type of population-wide information has been through representa-

tive general population surveys. However, despite many efforts undertaken by the WHO Global Program on AIDS (including the Partner Relations and Knowledge, Attitudes, Behaviors and Practices (KABP) surveys in 1989-1990 and recent sexual behavior assessments in the Demographic and Health Surveys), knowledge of general risk behavior remains poor in most countries. Only about 40 countries have general population surveys and few have looked at behavior changes over time. When UNAIDS asked HIV/AIDS country programs to provide information about the percentage of the population with non-regular partners and their condom use with those partners, less than one third of the countries could provide information on either.

Many factors contribute to the lack of behavioral data, including cost, reluctance to conduct such surveys for political or religious reasons, lack of personnel or technical resources and concerns about the reliability and validity of data that might be gathered. Using stratified sampling approaches to gather representative data, rather than insisting on a nationally representative sample, can provide a cost-effective and efficient alternative.

Without a complete picture of behavioral risk in a population it is difficult to prioritize prevention activities. Certain situations contribute disproportionately to HIV transmission, for example, sex work and injecting drug use. Yet few countries can provide estimates of the numbers of sex workers and clients or injecting drug users. Knowledge of important variations in risk behaviors within populations is rare, so prevention efforts are not necessarily focused on those with the greatest risk behavior. Populations such as men having sex with men and sexually active youth may be missed and other vulnerable groups such as factory workers, the military, fishermen and truckers are also likely to be overlooked.

What is happening with youth?

In many countries it is still assumed that few youth are sexually active. Carefully collected behavioral data are required to demonstrate the need for prevention programs among the young. Behavioral studies are also necessary to further demonstrate that sexual health education does not increase sexual activity. While many such studies have been

carried out in industrialized countries, few have been done in developing countries to date.

Improving the local relevance and quality of behavioral data

Locally relevant behavioral information is the best source for designing locally effective prevention programs. Communities know their own situations best; therefore behavioral research and monitoring must actively involve communities in critically evaluating their own risk situations and contributing to the design of effective programs. This involvement is also essential for communities to mobilize themselves to respond to the epidemic, rather than waiting for outside entities to act. In places where vulnerable populations may be severely marginalized, separate advocacy, research and prevention efforts might be needed to supplement community-planning processes.

Behavioral research instruments need to be relevant to their locality. For example, social constructions of sexuality and gender relations vary greatly from country to country and population to population. "International standard" questions may not reflect local categorizations of sexual partners, sexual behavior or gender relations, and questions not phrased in a relevant and understandable fashion for the interviewee will produce unreliable and invalid data that may be inappropriate to local prevention program design. Careful formative research is needed to determine the best way to ask questions in a local context. This means that international comparison questions might need to be supplemented by locally relevant questions that contribute to overall program design, targeting and evaluation.

Work is also needed on methodologies for improving the reliability and validity of behavioral data. Alternative approaches such as face-to-face interviews, tape-recorded interviews, and computer-based administration should be researched critically and the approach chosen that is most effective in the local setting.

Efficiently utilizing resources

As resources become more constrained, it is increasingly important to make efficient use of the limited resources available. Our response will remain inefficient without a better understanding of what forms of prevention are most appropriate and

effective with different population groups. Specific studies to compare the impact of different prevention programs are needed in a local context, and most future behavioral and epidemiological studies are best done in the context of these programs so that they contribute not only to knowledge of risk but to its reduction as well.

There is also a major gap in transferring existing knowledge on prevention between different places and into locally effective alternatives. Often we are aware of what constitutes effective prevention but do not act on this knowledge. Approaches that we know facilitate HIV prevention—such as the development of supportive legal and social environments—are not put into practice. To do so calls for increased political will and commitment to HIV prevention. In addition, there is often insufficient sharing of behavioral and prevention experiences among developing countries, calling for an increase in the creation and support of technical resource networks and increased support for South-South collaboration among developing countries.

Building political commitment and mobilizing resources

Countries that have had effective responses demonstrate that high-level political commitment is essential to containing or avoiding a serious HIV problem. Unfortunately, in most countries pregnant women provide one of the few epidemiological windows on the general population, and research often focuses on specific populations assumed to carry high levels of risk. These populations are often discriminated against, so that mobilizing action for them can be politically difficult. Data must be presented carefully to avoid increasing stigmatization and discrimination, but data on the behaviors of the population as a whole and a better understanding of the behavioral linkages among various populations can help convince policy-makers and community members that HIV is a serious problem.

Policy-makers and the public as a whole often operate on false assumptions about sexual and other risk behaviors in society. Discomfort with discussion of sexual and drug issues keeps many relevant issues off the public agenda. The lack of data to contradict false assumptions also contributes to the neglect of prevention needs.

There is a tendency to oversimplify the nature of epidemics. Even in countries where the epidemic has been labeled “heterosexual,” HIV transmission continues through other routes, including needle sharing and sex between men. In many parts of the world, *e.g.*, Africa and Asia, the focus on heterosexual transmission has become a barrier to looking at other forms of risk behavior. The invisibility, illegality and stigmatization of men having sex with men and injecting drug use contributes to this neglect in many cultures. Consequently, throughout much of the world we have little solid behavioral information on changes in same-sex or needle-sharing behaviors over time. This lack of information becomes directly linked to a lack of targeted prevention programs.

Reliable behavioral data can also help to make the importance of prevention clear and to demonstrate that prevention works. Often, however, the results of behavioral studies are not presented to policy-makers and the public in a clear fashion. Policy-makers should be made aware of behavioral research from the formulation stage in order to be engaged in the process. Reports and commendations resulting from behavioral data must be sensitive to the political and social constraints on policy-makers’ actions. Research on the policy-development process itself could help to improve the efficiency with which findings are converted into action.

Lack of knowledge leads to lack of action or inappropriate action

Despite two decades of a global HIV pandemic, it is surprising how little we actually know about risk behaviors in most countries of the world. Even the simplest baseline data for evaluating widespread behavior change in populations is often lacking. This makes it difficult to move forward and to convince people that what is being done makes a difference, especially when they see large numbers of people dying around them. A lack of accurate knowledge makes it difficult to mobilize responses or demonstrate the impact of programs, and ultimately provides one more excuse for not acting. It is essential that the necessary behavioral and epidemiological data be collected, that these data are analyzed, and that the findings be understood and presented in a clear fashion. Continuing to

neglect behaviors will foster continued neglect of prevention.

10. General Recommendations

Combined epidemiological and behavioral research is needed to understand the most important factors contributing to variations in HIV prevalence and incidence between countries and populations, and to the rapid growth of HIV in some settings. Such understanding is essential to directing resources and mounting an early and effective response.

The findings of behavioral research must be used to contribute to altering policies, improving programs, or mobilizing further support for prevention and care. This requires that clear links to action is established before any behavioral research or data collection is undertaken.

Whenever possible, behavioral research should be conducted in the context of actual prevention and care programs. However, the implementation of programs should not be delayed until behavioral research is completed, but instead early action taken and the findings used to improve the program as it proceeds.

There is an urgent need to improve and expand behavioral assessment and surveillance to complement other process, outcome and impact data on HIV/STD. This is essential information that will improve our capacity to monitor the trends of individual behaviors, changes in social norms, and evaluate the impact of prevention efforts.

The impact of the interaction between TB and HIV must be minimized. TB and HIV programs must harness their capacity and the capacity of

their partners and the communities that they serve in order to control the spread of these dual epidemics.

Data collection and analysis is needed to shape both prevention and care programs relevant to migrants, refugees and internally displaced persons. Sufficient attention must be given to the impact of gender and age differences, as well as differences in needs at different stages of the migration process.

The number of orphans, especially those resulting from the AIDS death of the mother, is large and will continue to rise. We need to monitor the extent of care and support needs, with attention to the care and support currently being provided. Attention must be given to the documentation of best practices in community responses in different cultural settings in order to provide the best possible programs for orphans worldwide.

The contribution of HIV transmission in the health care setting to the spread of HIV in the general population is relatively low even in developing countries. However, for the sub-population of health care workers in high prevalence settings, the risk of transmission may be significant. In order to reduce these infections, we need more and better data on blood safety, patient-to-patient transmission and occupational exposure. This information will enable program managers to influence decision-makers to allocate adequate resources.

The growing needs for HIV/AIDS care and the ever-expanding array of therapies call for a focused attempt to collect and analyze data on care needs, demands, availability and use. As care is becoming strongly linked to prevention, there is a need to devise and implement monitoring systems that transcend prevention and care fields and show the degree of progress achieved in each of these fields.

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