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GLOBAL
PROGRAMME
ON AIDS

CURRENT AND FUTURE DIMENSIONS
OF THE HIV/AIDS PANDEMIC

A CAPSULE SUMMARY

SEPTEMBER 1990



WORLD
HEALTH
ORGANIZATION

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INTRODUCTION

The following global summary of the current status and future trends of HIV infections and AIDS cases was prepared with the most current data available to the Global Programme on AIDS of the World Health Organization (WHO/GPA) as of September 1990. Minimal use was made of the officially reported AIDS cases to WHO/GPA since at best they represent a time distorted picture of HIV infections acquired up to a decade or more previously.

Estimates of HIV seroprevalence were those made by national epidemiologists or made by WHO/GPA from available data. For African countries, an extensive computerized database was used containing all published studies as well as official data available to WHO/GPA. A similar database has been developed for all Asian and Western Pacific countries as of mid-1990.

Short-term (less than 5 years) projections of adult and paediatric AIDS cases were made with an epidemiologic model developed by WHO/GPA. Longer term projections of HIV prevalence were derived from a Delphi study carried out by WHO/GPA in late 1988 to early 1989. In general, the lower range of HIV seroprevalence estimates were used for modelling purposes, and thus, the WHO/GPA estimates and projections should be viewed as conservative. These estimates will need to be revised periodically as more data adds to our understanding of the current and future dimensions of this unprecedented pandemic.

GENERAL

- The human immunodeficiency virus (HIV) is transmitted primarily by sexual intercourse (vaginal or anal).
- Two types of HIV are known – HIV-1 and HIV-2. In this document, unless otherwise specified, HIV will refer to HIV-1. HIV-2 is found primarily in West Africa; its modes of transmission appear identical to HIV-1, but it is not known whether it is as pathogenic.
- The HIV/AIDS pandemic is comprised of many separate epidemics (even within a single country). Each epidemic has its own starting period and involves different type(s) and frequency of HIV-risk behaviours (i.e., distribution and number of persons with multiple sexual partners, both homosexual and heterosexual, and IV drug users who share injection equipment).
- HIV transmission via infected blood or blood products was a relatively limited but important mode of transmission until the mid-1980s in industrialized countries; as of 1990 this problem is being increasingly addressed in most developing countries.
- Studies to date indicate that about 50% of adults infected with HIV will develop AIDS within 10 years of infection. No data are available beyond 10 years, but the vast majority of HIV-infected persons are expected to develop AIDS eventually. No major differences have been found in progression rates for middle-aged adults by geographical area or race. Progression rates among perinatally infected infants are more rapid than in adults.
- Whether the natural history of HIV infection differs to any significant degree between men or women is not known, and the types of detailed studies needed to answer this question are extremely difficult to plan and implement. Some early reports suggested that pregnancy might accelerate clinical progression of HIV infection. Subsequent observations indicate that this is not true.
- Virtually all persons diagnosed with AIDS die within a few years, but survival after diagnosis has been increasing in industrialized countries from an average of less than 1 year to 1-2 years at present. Survival time in developing countries remains short – about 6 months or less. Survival appears to be directly related to routine use of antiviral and prophylactic drugs and the general quality of medical care.
- As of 1990, about 60% of all global HIV infections have been spread by vaginal intercourse; the relative proportion of HIV infections due to heterosexual versus homosexual intercourse varies markedly in different areas of the world.
- The HIV pandemic is dynamic and has changed markedly during its first decade. In most industrialized countries, the incidence of new infections is decreasing while in many developing countries HIV incidence is increasing at an alarming rate. It is unlikely that the global prevalence of HIV infections will stabilize or level off for at least several decades.
- As of September 1990, over 280 000 AIDS cases have been reported to WHO. But, because of under-recognition, under-reporting, and delays in reporting, WHO estimates that over 800 000 adult AIDS cases may have occurred. Also as of late 1990, WHO estimates that at least 8 to 10 million HIV infections in adults have occurred worldwide.

- In addition, as of late 1990 over 400 000 paediatric AIDS cases as a result of perinatal transmission are estimated to have occurred, with over 90% of this total in sub-Saharan Africa. Thus, the cumulative total of global AIDS cases as of late 1990 is over 1.2 million.
- Virtually all short-term (less than 5 years) projections predict that AIDS cases will at least double or triple in most areas of the world. Projections more than 5 years in the future are difficult to make, but WHO's Delphi projections (the average of "expert" estimates) indicate that by the year 2000 there may be a cumulative total of 15 to 20 million HIV infected persons and from 5 to 6 million cumulative AIDS cases.
- Potential interaction of HIV infection with other infectious disease agents has been of great medical and public health concern. The only significant interaction identified to date is with tubercule bacillus infection. Tuberculin positive persons who also have an HIV infection develop clinical tuberculosis at a very accelerated rate. As of mid-1990, WHO has estimated that there are close to 3 million adults worldwide who are infected with HIV and TB, with the vast majority in sub-Saharan Africa.
- During the 1990s, over 3 million AIDS cases will occur in adults infected prior to 1990; another 1 to 2 million adult AIDS cases will develop as a result of unprevented HIV infections acquired in the 1990s; and about 1 million adult AIDS cases may be prevented by public health programmes.
- AIDS during the 1990s will have a very selective and severe impact on adult and child mortality rates in many areas of the world.
- WHO/GPA has described several epidemiological patterns of HIV infections and AIDS cases (HIV/AIDS) based on TWO factors – one is the year or time period when HIV was introduced or began to spread extensively in a specified population, and the other is the predominant mode or modes of HIV transmission observed. The latter factor is primarily determined by the patterns and prevalence of the different HIV-risk behaviours which may be present, such as having multiple sexual partners (male or female) and IV drug use.

Pattern I – Extensive spread of HIV began in the late 1970s/early 1980s. Homosexual males and IV drug users have been the predominantly affected populations, but heterosexual transmission is increasing.

Pattern II – Extensive spread of HIV began in the mid-to-late 1970s/early 1980s. Heterosexual transmission has and continues to predominate.

Pattern I/II – Extensive spread of HIV began in the late 1970s/early 1980s. Initially mostly homosexual men and IV drug users were affected, but as of mid-to-late 1980s, heterosexual transmission is predominating.

Pattern III – Introduction and/or extensive spread of HIV did not occur until mid-to-late 1980s. Extensive spread of HIV is now being documented in several countries in South-East Asia, but the prevalence of HIV, in most countries classified within this pattern, remains relatively low.

- Because this epidemiological classification is based on both the time when HIV was either introduced or began to spread extensively, PLUS the predominant mode(s) of HIV transmission, a Pattern III country can never be reclassified as Pattern I or Pattern II.
- The major reason why Pattern III countries currently have relatively low numbers of HIV infections is because HIV was first introduced or began to spread extensively in them from 5 to 10 years after the HIV/AIDS pandemic began in countries classified as I, I/II, or II. Pattern III countries where extensive spread of HIV has not yet been documented, but where high rates of sexually-transmitted-diseases (STDs) exist and/or where IV drug use is a problem can expect to have a large HIV/AIDS epidemic during the 1990s.

INDUSTRIALIZED WESTERN COUNTRIES

- In the industrialized "Western" countries of North America, Western Europe, and Australia and New Zealand, HIV infections began to spread extensively shortly before or after 1980. Through the 1980s, the population "groups" affected predominantly were men who had sex with other men (gays/bisexuals) and IV drug users. This epidemiologic pattern has been designated as Pattern I by WHO.
- Within Pattern I countries, marked differences exist in proportion of AIDS cases among homosexual men and IV drug users. On the west coast of the USA, about 90% of AIDS cases have been diagnosed in homosexual men, while on the east coast up to 40% of cases have been identified in IV drug users. Similarly in Western Europe, the vast majority of AIDS cases in the north – especially the Scandinavian countries – have occurred in homosexual men; but in the south – particularly Spain and Italy – IV drug users constitute more than half of reported AIDS cases.
- Within Pattern I countries, transmission of HIV among homosexual men has decreased markedly since the mid-1980s; large numbers of uninfected IV drug users remain in many areas and explosive spread might occur in these populations in future if they continue their risk behaviour; and heterosexual transmission has been increasing slowly during the latter half of the 1980s, especially in urban populations with high rates of other sexually transmitted diseases (STDs) and/or IV drug use.
- Estimates of HIV seroprevalence in many Pattern I countries have been revised downward in recent years as more epidemiologic and serologic data became available. As of late 1990, an estimated 1.5 million HIV infections have occurred in Pattern I countries, with about 2/3rds or 1 million infections in the USA; about 185 000 AIDS cases have been reported but perhaps 225 000 cases may have occurred as of late 1990.
- Perinatal transmission has not been a major problem in Pattern I countries during the 1980s, but is increasing as the number of HIV-infected women grows. It has been estimated that up to 20 000 infants may have been born in the USA to HIV-infected women since the start of the epidemic.
- In many large cities of Pattern I countries, AIDS has become the leading cause of death in young adults aged 20-40 years. In most Pattern I countries during the 1990s, HIV-related deaths will become one of the leading, if not the leading cause of death in this age group. Homosexual men and IV drug users will continue through the 1990s to be the most affected population "groups" in these countries.
- During the early 1990s, health care costs for HIV-related illnesses in Pattern I countries will be at least several billion dollars (US) annually. This cost can be expected to increase steadily as newer and more effective but more expensive treatments become available for the increasing numbers of illnesses due to HIV.
- Almost all of the estimated direct medical care costs for AIDS treatment up to the mid-1990s will be incurred regardless of how successful public health programmes may be in preventing new HIV infections, since about 90% of AIDS cases expected over the next 4-5 years will occur in persons already infected.
- The WHO Delphi study estimated that over half of the potentially new HIV infections expected in Pattern I countries during the 1990s could be prevented by adequately supported public health prevention/control programmes.

THE CARIBBEAN AND LATIN AMERICA

- Extensive spread of HIV probably began in the early 1980s; the population "groups" initially affected were predominately homosexual or bisexual men and IV drug users residing in large cities (Pattern I).
- In many countries during the latter half of the 1980s, heterosexual transmission of HIV increased to become a major, if not the major, mode of HIV spread. As a result, WHO reclassified the Caribbean and Central and South American countries as Epidemiologic Pattern I/II.
- In some Latin American countries (Central and South America), bisexual men have accounted for up to 25% of all reported AIDS cases. Many of these men are married and have stable female sex partners. As a result, increasing numbers of women are becoming infected.
- HIV prevalence among female prostitutes in Central American countries has increased markedly. One study in Honduras in 1989 reported an HIV prevalence of close to 20% in several hundred prostitutes; a more recent study in a similar group has shown a prevalence of 45%.
- As of late 1990, over 25 000 AIDS cases have been reported from Pattern I/II countries: Over 11 000 reported from Brazil; over 4 400 from Mexico; over 2 400 from Haiti; and over 1 200 from the Dominican Republic. Some of the world's highest AIDS case rates are found in the Caribbean (i.e., Bermuda, the Bahamas and Haiti). Most likely the actual number of AIDS cases that have occurred is 50% to 100% higher than the reported cases in many Latin American and Caribbean countries.
- Estimates of total HIV infections are difficult to make for Pattern I/II countries because of limited data, but the total as of 1990 is thought to be between 500 000 to 1 million.
- In addition to the continued need for intensive prevention/control programmes in the Caribbean and Latin America during the coming decade, the health care requirements for the projected hundreds of thousands of AIDS cases will constitute an immense challenge to those countries that already have inadequate health care systems.

SUB-SAHARAN AFRICA

- Although some evidence suggests that HIV infection was present several decades earlier, most of the epidemiologic and medical data indicate that extensive spread of HIV did not start in Central and Eastern Africa until the late 1970s. Heterosexual transmission of HIV continues to be the predominant mode of spread in sub-Saharan Africa: This region has been classified by WHO as Pattern II.
- In these African countries, transmission via infected blood continues to be a relatively small (about 10% of all HIV infections) but important public health problem. The problem is declining as routine HIV screening of blood for transfusions is implemented more widely.
- The contribution to HIV spread by such factors as circumcision (male or female), ritual scarification, and unsterile needles and syringes in this region has been studied, and collectively they are believed to account for only a very small proportion of HIV infections in this region.
- Although there has been ample speculation and concern about mosquitoes and other biting insects in spreading HIV, all laboratory and epidemiologic studies show that they are incapable of transmitting HIV infection.
- High rates for other STDs, especially those which cause ulcerative lesions such as chancroid and syphilis, combined with high rates of sexual partner exchange are believed to be important factors which facilitated the rapid spread of HIV in sexually active persons aged 15-49 years in this region.
- Due to heterosexual transmission, the numbers of male and female AIDS cases and HIV infections are about equal. Because many women of child bearing age are infected, HIV transmission from infected mother to fetus or infant during pregnancy, shortly before, or after birth (perinatal transmission) is a widespread and increasing problem in sub-Saharan Africa.
- Most African countries did not begin routine reporting of AIDS to WHO until 1987. Reporting has improved markedly since 1989; as of late 1990, about 70 000 AIDS cases have been reported from this region. But, because of extensive under-recognition, under-reporting and reporting delays, WHO estimates that closer to 600 000 adult AIDS cases probably have occurred in Africa – or more than half the estimated global total.
- WHO estimated that as of 1987 about 2.5 million HIV infections had occurred in sub-Saharan African countries. Of this total 2/3rd were distributed in only 9 countries of Eastern and Central Africa; yet these countries contain only 1/6th the total population of sub-Saharan Africa. As of 1988 up to 30% of 15-49 year-olds in large urban areas of these countries were infected with HIV.
- Recent serologic data from all sub-Saharan African countries indicate that HIV prevalence continues to increase. In 1987 most infections were concentrated in urban populations; now extensive spread throughout most sub-Saharan African countries is being increasingly documented in rural areas which contain the majority of the population. A large serosurvey in Uganda estimated that there were over 750 000 HIV infected persons as of late 1988 in that country.
- As of late 1990, a very conservative estimate of total adult HIV infections in this region is at least 5 million.

- In addition to moderate seroprevalence levels of HIV-2, marked increases of HIV-1 prevalence has been noted in the past few years in many West African countries. In Abidjan, Côte d'Ivoire HIV-1 prevalence in adults has risen from around 1% to at least 4% within 2 years. During the late 1980s, reported AIDS cases from West African countries has been increasing steadily; close to 4 000 AIDS cases have been reported from Côte d'Ivoire as of late 1990.
- The WHO Delphi study noted that prevention of heterosexual HIV transmission in this region would be much more difficult than in Pattern I, I/II or III areas; it is believed that only about a quarter of the 8 to 10 million new HIV infections expected in the 1990s in this region can be prevented.
- During the 1990s, the impact of AIDS will be greatest in large urban areas of sub-Saharan African countries – especially Central and Eastern Africa. In urban centers, AIDS deaths in young children and in those aged 15-49 will reduce expected population growth by over 30%; and the adult mortality rate will more than triple. However, population growth for these countries is expected to remain positive during this decade.
- Beyond the year 2000, if HIV prevalence continues to increase in urban areas, and if HIV prevalence in most rural areas approaches that now found in urban areas (situations being documented), then a negative population growth rate is possible.
- Expected infant and child deaths due to AIDS may increase child mortality rates by as much as 50% in many sub-Saharan countries during the 1990s. Thus, the gains in child survival laboriously achieved over the past decade will be wiped out.
- As of 1990, about 500 000 HIV-infected infants have been born in Africa, and by the end of the 1990s an additional 10 million or more may be expected.
- Projections of HIV-infected infants were based on a perinatal transmission rate of about 30%. This rate may increase with time, but it nevertheless suggests that up to 70% of infants born to HIV-infected mothers will not be infected. These uninfected infants will constitute an increasing group of orphans since most of their HIV-infected mothers will die of AIDS within 5 to 10 years after their birth. More than 10 million young (less than 10 years of age) children are expected to be AIDS-related orphans in Africa during the 1990s.
- The economic and social impact of a disease that kills people in their most productive years will be immense. The selective impact on young and middle-aged adults, who include business and government workers as well as members of social, economic, and political elites could lead to economic and even political destabilization.
- Health care and social support systems in sub-Saharan African countries are considered inadequate to provide optimal care for the current clinical burden of disease. AIDS patients now comprise 20% to 40% of all inpatients in most large urban hospitals in Central and Eastern Africa. The escalating burden of providing care for the growing numbers of infants and adults who will develop HIV-related diseases during the 1990s will require increasing support from the world community.
- An adequate response to this unprecedented epidemic will require substantially increased resources in the coming decade so that sub-Saharan countries can implement intensive AIDS prevention/control programmes.

PATTERN III AREAS

- Areas in which HIV was only introduced or began to spread extensively in the mid-1980s or later have been classified by WHO as Pattern III. In most such areas the predominant mode(s) of HIV transmission have not been determined because the prevalence of HIV infection has been very low. Pattern III currently includes countries in North Africa, the Middle East, Eastern Europe, Asia and the Pacific (excluding Australia and New Zealand which are Pattern I countries).
- As of 1990, Pattern III countries have about 5% of the estimated global total of at least 8 million adult HIV infections, yet contain about 70% of the world's total population.
- In all Pattern III countries, a total of just over 1 000 AIDS cases (less than 0.5% of the global total of over 280 000) have been reported to WHO as of late 1990. AIDS cases may actually be much higher, especially in the Middle East; but in general the low number of reported cases is an accurate reflection of the low HIV prevalence in these countries. During the last few years, however, the situation has been changing markedly in a few countries.
- In two Eastern European countries (USSR, Romania), extensive HIV transmission has occurred in infants and young children as a result of inadequate and inappropriate medical practises. These "epidemics" were due to reuse of medical injection equipment and inappropriate use of micro-transfusions of blood and blood products. In the USSR outbreak several hundred children were infected; in the Romanian outbreak, still under investigation, it is believed the eventual number of infected children will be between 1 to 2 thousand.
- Recent social and political changes in most Eastern European countries will lead to increased travel and contact with industrialized Western countries. Whether or not such changes will foster increased HIV-risk behaviours needs to be determined.
- HIV/AIDS prevention/control programmes in these countries need to be more fully developed and supported over the next few years. In addition to developing educational programme on HIV/AIDS for health care providers and the general public, high priority must be given to improving medical care procedures to avoid future outbreaks of blood borne agents such as HIV.
- In Thailand, extensive epidemiologic studies have monitored the dramatic increase in HIV infection since 1988. HIV prevalence among the estimated 60 000 to 80 000 IV drug users in Bangkok increased from less than 1% in late 1987 to about 50% in 1990. Moreover, increases of 30% to 40% in HIV prevalence have been documented among female prostitutes in several cities in Thailand.
- In 1990, the Ministry of Health of Thailand and WHO estimated that at least 50 000 HIV-infected persons are now present in Thailand. This estimate is larger than that for the United Kingdom (UK) which has a population of approximately the same size.

- Thailand as of late 1990 reported less than 50 AIDS cases, but can expect over ten thousand before 1995.
- In India, surveys in the past 2 years have shown HIV infection rates as high as 70% in groups of female prostitutes. HIV serologic surveys in India have not been comprehensive enough to allow for an estimate of total HIV infected persons, but it is clear that HIV infection has become firmly established in some Indian cities; more increases in HIV prevalence can be expected in the near future.
- The HIV/AIDS epidemics in Pattern I, I/II, and II countries are about 10 years old. As of 1990, extensive spread of HIV has not been recorded in most Pattern III countries. Only a few Pattern III countries have documented extensive spread of HIV infections within the last few years, but in virtually all large cities in Pattern III countries sexually-transmitted diseases are prevalent and the extent of IV drug use is not well known.
- During the 1990s, some additional explosive outbreaks in IV drug users and prostitutes will undoubtedly be documented in some Pattern III countries, but HIV spread among persons at risk of sexually-transmitted diseases can be expected to increase at a slow but steady rate in most countries which up to 1990 have been affected only minimally.
- The largest relative increase of AIDS cases projected by the WHO Delphi study for the coming decade was in Pattern III countries; from about a thousand cases during the 1980s to 100 000-200 000 cases during the 1990s. If HIV infections increase very rapidly in Pattern III populations during the early 1990s, then the WHO Delphi global projections for the year 2000 will need to be revised significantly upward.

ANNEX

Estimates of HIV seroprevalence

	1986-1987	1989-1990
USA	1 – 1.5 million	1 – 1.5 million
NYC	> 400 000	> 200 000
UK	24 000 – 80 000	15 000 – 30 000
Africa	2.5 million	5 million
Thailand	< 1 000	50 000 – 100 000
World	5 – 10 million	8 – 10 million

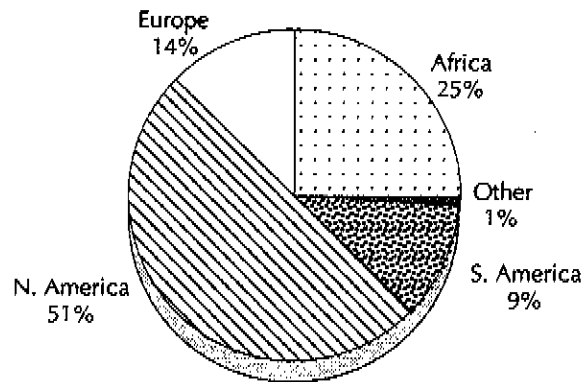
WHO 90803

Global distribution of estimated HIV infections and reported and estimated adult AIDS cases (as of 1 September 1990)

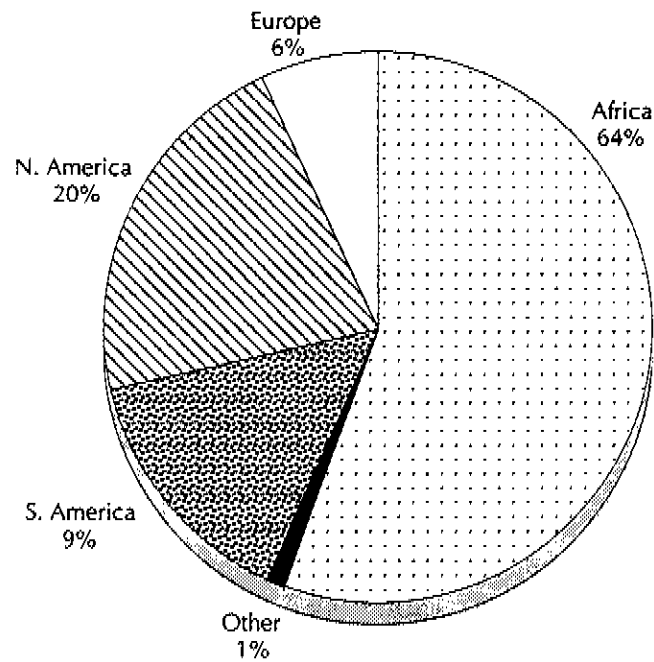
Area	Estimated HIV	Reported AIDS	Estimated AIDS
Africa	> 5 000 000	71 078	> 500 000
North America	1 000 000	144 772	175 000
South America	1 000 000	25 889	75 000
Asia	500 000	785	2 000
Europe	500 000	38 353	50 000
Oceania	30 000	2 133	2 500
Total	> 8 000 000	283 010	> 800 000

WHO 90804

Reported and estimated AIDS, September 1990

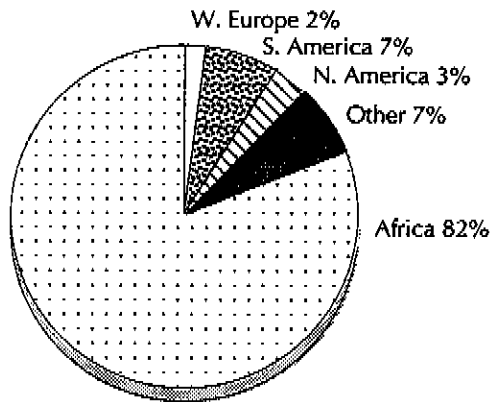


Reported AIDS
283 010 cases reported

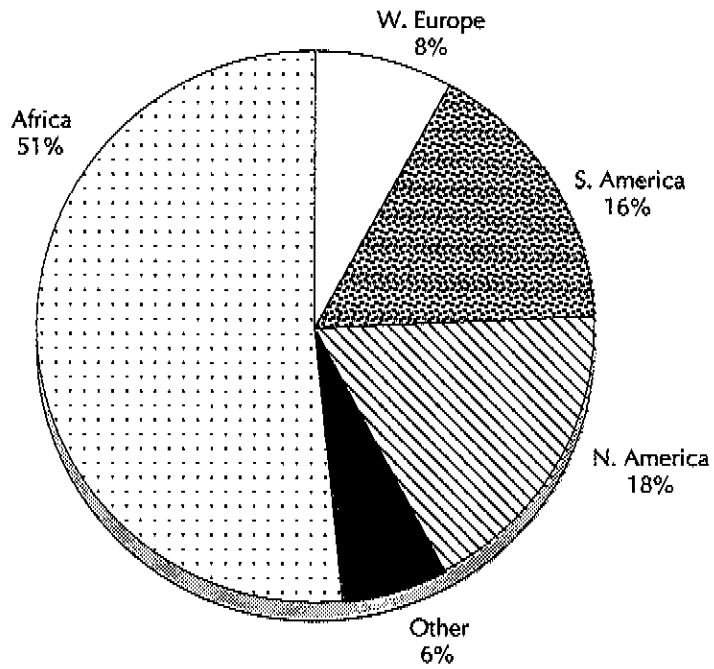


Estimated AIDS
over 800 000 cases estimated

Global distribution of HIV-infected adults



Females
3 million



Males
5 million

HIV transmission

Global Summary – 1990

Exposure	Efficiency	% of total
Blood transfusion	> 90%	5
Perinatal	20% – 40%	10
Sexual intercourse	0.1% – 1.0%	75
Vaginal		(60)
Anal		(15)
IV drug use	0.5% – 1.0%	10
Needle type exposure	< 0.5%	< 0.1
Other	? – 0.0%	? – 0.0

WHO 90206

WHO/Delphi projection

Global: Projected cumulative adult AIDS

