

THE HANDBOOK FOR AIDS PREVENTION IN AFRICA

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DEDICATION

The Handbook for AIDS Prevention in Africa is dedicated to
the men, women, and children of Africa.

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HANDBOOK FOR AIDS PREVENTION IN AFRICA

Jonathan M. Mann

The individual, national and global response to the discovery of the HIV/AIDS pandemic during the 1980s has been remarkable. Indeed, the word “unprecedented” has been used so often to describe elements of this response to HIV/AIDS that it has become a cliché. The development of a Global AIDS Strategy in mid-1986 was one of these “unprecedented” accomplishments during this extraordinary period, for it is the first truly global strategy to prevent and control an epidemic disease.

To reach the point of global strategy, several preconditions were necessary:

First, the infection and disease had to be a genuine threat to all countries. The identification of HIV in 1983 and the availability of tests to identify asymptomatic HIV infection in 1985 led to discovery of the worldwide scope of HIV.

Second, the pandemic had to be recognized as a worldwide problem. This could not have occurred without the modern global communications network of the media. During the 1980s, AIDS probably became the world’s best known, or at least most heard of, disease. The perception of HIV/AIDS as a new and global threat became rapidly established.

Third, the essential elements of prevention and control, including the global perspective, had to be articulated by the international community. For this work, the World Health Organization, with its constitutional responsibility to direct and coordinate international health work, had a unique and vital role. WHO developed the Global AIDS Strategy which was approved by the World Health Assembly (representing all 166 member states of WHO) and then, in an unprecedented fashion, by the United Nations General Assembly.



Implementation of the Global AIDS Strategy is an important WHO responsibility. Yet the major challenge to all, at the local, national, and international levels, is to implement, monitor, and evaluate programs that convert the strategy into action. To accomplish this task, every country in the world needs its own strong and comprehensive national AIDS program. Such programs, conceived within a framework developed by WHO, now exist in most countries (as of September 1, 1989, WHO was collaborating with over 155 countries in support of national programs).

The special contribution of this Handbook, at the intersection of strategic thinking and program development, is to examine how different elements of national AIDS program activity have been designed, implemented and monitored. This Handbook focuses on Africa precisely because of the extensive experience already available in AIDS prevention and control programs within this continent.

Readers of this Handbook will learn how the diverse challenges of AIDS prevention and control have been faced in African countries. The reader will be impressed by the creativity and dynamism of national AIDS programs.

The storehouse of experience is already vast – as are the challenges ahead. This Handbook helps all who are concerned with the practical aspects of HIV/AIDS prevention and control to learn, to reflect upon their own work and national efforts, and to help stimulate the insights upon which our individual and collective future may well depend.

INTRODUCTION



**Peter Lamptey
Daniel Tarantola**

Acquired Immune Deficiency Syndrome (AIDS) is a rapidly growing public health problem throughout the world. It is particularly serious in some African countries, where large numbers of individuals are already infected with the Human Immunodeficiency Virus (HIV), and a substantial number are dying from AIDS.

In February 1987, the World Health Organization Global Programme on AIDS (WHO/GPA) was launched. The Programme's objectives are to:

reduce HIV transmission and the impact of HIV and AIDS in the individual and society; and to

foster and promote international cooperation and coordination, transcending political boundaries.

Sub-Saharan African countries in early 1987 were faced with different dilemmas which reflected regional situations regarding HIV/AIDS:

In East and Central Africa, the spread of HIV was visible in urban areas and from urban to rural areas; a major prevention effort had to be undertaken to slow down the spread of infection and face up to the growing demand for care of AIDS patients.

In West and Southern Africa, the spread of HIV was neither as rapid nor as visible. The challenge to policymakers was to decide what degree of priority should be given to AIDS prevention and control when so many other priorities in the health and social sectors require more attention and resources.

WHO/GPA undertook a massive mobilization effort worldwide, with particular emphasis on Africa. African countries needed to recognize the urgency of the pandemic and develop short-term plans of action, followed by medium-term plans covering periods of three to five years. To date, 43 of the 45 countries and territories in Africa and in the neighboring Indian Ocean region have an ongoing AIDS program; of these, 39 have a three- to five-year plan. In these programs, resource mobilization has to a large extent provided the technical and financial support required for the first year of national programs.

Our knowledge of the epidemiology, pathology and clinical manifestations of the disease has continued to improve; however, in the absence of a cure or a vaccine, prevention remains the only means of reducing the spread of HIV. Nonetheless, most of the currently available AIDS information is on the clinical and epidemiological aspects of the disease. Very little information is available for health providers involved in AIDS prevention. There are a number of reasons for this state of affairs:

Most AIDS resources are being spent on research issues in virology, immunology, and pathology of the disease

AIDS prevention efforts are relatively new and underfunded

There has been limited sharing of information on prevention efforts.

The purpose of *The Handbook for AIDS Prevention in Africa* is to be both useful and practical. It is designed for program managers, health care providers, and allied professionals who need a comprehensive package of information and discussion focusing on relevant issues in AIDS prevention strategies. However, it is meant to serve as a guide and not as a textbook with all of the answers for AIDS prevention. AIDS is a relatively new health problem and our knowledge and understanding (especially of preventive approaches and strategies) will continue to evolve. The Handbook presents an overview of our current knowledge and the approaches used to reduce HIV transmission.

Readers of the Handbook who choose to put it to practical use will find it necessary to apply relevant principles and approaches from the book to their local situations. We anticipate that this Handbook will trigger development of innovative approaches to AIDS prevention in various locales; we expect some of these innovations will prove useful in various additional settings.

We have published *The Handbook for AIDS Prevention in Africa* in a loose-leaf binder format for several reasons. This format allows for:

the separate use of individual chapters;

updates on each chapter as new information becomes available; and

the addition of new chapters on relevant topics.

The level of support and input for this publication has been truly exemplary. The Handbook has been written and revised by experts with extensive AIDS prevention experience in Africa: ten of the contributing authors are Africans, and the remaining authors and reviewers have expert AIDS prevention experience in Africa. Each of the chapters has been written specifically for this publication and each covers an important facet of the African situation. It is both fitting and proper, therefore, that we close this introduction with a brief summary of each chapter.

CHAPTER 1: The Epidemiology of HIV/AIDS in Africa

Peter Piot, Jeffrey Harris

Sub-Saharan Africa is used as an example of the shifting pattern of HIV/AIDS and the heterogeneity of infection. Discussion focuses on recent data regarding the distribution of HIV/AIDS and the determinants associated with the spread of HIV in populations. Taken together, an understanding of epidemiologic factors is essential for successful AIDS/HIV control and prevention.

CHAPTER 2: HIV Testing

Sheila Mitchell, Souleymane Mboup

The importance of HIV testing in a national AIDS control plan is emphasized, together with a description of the advantages and disadvantages of specific tests. Methods of sustaining a testing program once it has been established are discussed, together with suggestions for laboratory safety and staff training.

CHAPTER 3: Surveillance for HIV, AIDS, and STDs

Gary Slutkin, James Chin

Surveillance data provides a guide to preventing the further spread of HIV. The design of HIV/AIDS surveillance systems is based upon answering two questions: what are the prevention priorities, and how will the obtained data be used? Discussion focuses on surveillance efforts used to determine distribution and trends of infection in sentinel target populations.

CHAPTER 4: Reducing HIV Transmission Through Blood

Jean Emmanuel, Anthony Britten

AIDS has had a disastrous effect upon blood safety and has added to the already serious risks associated with transfusion in Africa. Methods of incorporating blood transfusion services into a national blood transfusion policy are discussed, together with information on the impact of HIV screening on blood donor recruitment.

CHAPTER 5: Control and Prevention of STDs

Peter Piot, Subhash Hira

STDs other than AIDS are an important cause of morbidity, disability, and loss of productivity in Africa, and there is growing evidence that STDs facilitate the sexual transmission of HIV infection. As a result, an increasing number of countries have organized STD control and prevention programs in conjunction with their AIDS control programs. Guidelines are discussed for integrating STD services into health care systems, including planning, targeting groups, interventions, case management, screening, and support components.

CHAPTER 6: Communication for AIDS Prevention in Africa

William A. Smith, Deborah L. Helizer-Allen, Jake Obetsebi-Lamptey

Many African cultures share common opportunities and constraints for developing AIDS prevention communication. These are discussed from the perspective of a legacy of AIDS denial, a current age of AIDS information, and a projected age of effective prevention in which correct information would be presented to selected populations within the context of behavior change and diverse strategies.

CHAPTER 7: Competency-Based Training for AIDS Prevention

John Rich, Leopold Zekeng

Competency-based training (CBT) is especially relevant to effective AIDS prevention because its objective is to equip individuals with the skills to accomplish specific tasks. The steps for CBT are presented, followed by suggested interventions for AIDS prevention, focusing on blood safety, safer sex, and perinatal prevention.

CHAPTER 8: Targeting of Prevention Programs in Africa

Peter Lampiey, Malcolm Potts

In sub-Saharan Africa, the primary risk group of the AIDS epidemic is composed of individuals with multiple sexual partners and those who change partners frequently. The epidemiology of AIDS in this primary risk group is discussed. Examples of programs targeted to prostitutes and their partners are presented. The lessons learned to date also have implications for prevention initiatives for other groups who are at high risk of HIV infection.

CHAPTER 9: Counseling and AIDS

Dace Stone, Noerine Kaleeba

Although the public's fearful responses to AIDS are well known, the response of decision-makers, health care providers, and social workers has often been similar. This chapter covers the roles counseling can play in resolving fear-based conflicts, strengthening information, facilitating the adoption of new behaviors, and providing an atmosphere that respects the individual.

CHAPTER 10: Community-Based Management of AIDS

Virginia O'Dell, Benjamin Nkowane

Programs are urgently needed which provide compassion and education while conserving resources for AIDS care and prevention. Few families reject the idea of home care when the option is presented positively and is not seen as an abandonment by the health care system. Utilizing a mix of services can be most effective to provide optimum care and effective prevention. Two AIDS care and prevention programs in Zambia are used as examples.

CHAPTER 11: AIDS Prevention in Family Planning Programs

Nancy Williamson, Esther Boohene

Family planning (FP) programs cannot be primary structures to fight AIDS because few African countries have well-developed programs. However, FP programs are potentially helpful in a supportive role for education, condom distribution, STD control, and AIDS-prevention counseling. This chapter explores the inputs required for FP programs to make an impact on AIDS prevention.

CHAPTER 12: Primary Health Care and AIDS Control Programs

Jack Martin

AIDS control programs should strengthen existing Primary Health Care (PHC) programs in districts and locally. PHC principles, which can be effective in AIDS control, are discussed. These include reducing inequities by focusing on needs, emphasizing prevention and health, and encouraging community involvement in a decentralized fight against AIDS.

CHAPTER 13: Evaluation of AIDS Programs

David Heymann, Richard Biritwum

W. John Paget

An assessment of a national AIDS program provides information for cost-benefit and cost-effectiveness analyses and an estimation of the program's sustainability. The stages of evaluation are discussed within the context of the special conditions involving AIDS, including prevention of HIV infection, and control of HIV impact once infection has occurred.

**THE EPIDEMIOLOGY OF
HIV/AIDS IN AFRICA**



THE EPIDEMIOLOGY OF HIV/AIDS IN AFRICA

INTRODUCTION

Three general epidemiologic patterns of HIV/AIDS can be distinguished worldwide:

- Pattern I: N. America, W. Europe, Australia and New Zealand, predominately among homosexual men and intravenous drug users
- Pattern II: sub-Saharan Africa, parts of the Caribbean, predominately heterosexual, perinatal, and via blood transfusion
- Pattern III: E. Europe, N. Africa, Asia and the Pacific, with relatively few cases, mostly from contact with Pattern I and II countries
- Latin America is now considered Pattern I/II
- many countries worldwide seem to be moving toward Pattern II

FREQUENCY AND DISTRIBUTION OF AIDS/HIV

AIDS surveillance indicates:

- most AIDS cases in Africa are reported from cities
- beyond the above fact, there are many differences, suggesting that the patterns of spread may be different

HIV seroprevalence sentinel surveillance indicates:

- greater than 15% infection rates in the cities of inner-central Africa
- 5%-10% rates in central Africa as a whole
- less than 3% rates in most other parts of the continent
- female prostitutes and patients with STDs are sentinel groups with the highest HIV prevalence rates

Although estimates lead to the conclusion that by the year 2000 there will be a cumulative total of one million AIDS cases in Africa, there are many unknowns, including:

- the natural history of HIV infection
- sexual behavior patterns in different populations
- the impact of current prevention programs

HIV-2 is a distinct virus from HIV-1:

- HIV-2 occurs mainly in W. Africa
- may spread at a slower rate than HIV-1
- may be less easily transmissible
- occurs in the same groups as HIV-1
- is mostly transmitted heterosexually

VARIABLES IN THE SEXUAL SPREAD OF HIV

Sexual transmission is largely determined by an interaction of factors, including:

- demographics: the most sexually active age group is larger in Africa than in N. America or Europe; rapid urbanization; inequalities in male-to-female ratios; and major transcontinental roads
- political/economic factors:
- behavioral/biologic factors: a higher rate of partner change, and more frequent contacts with highly infected groups

FROM MOTHER TO CHILD

A substantial and growing proportion of women of childbearing age in sub-Saharan Africa are HIV infected:

- HIV infection appears to adversely affect pregnancy, although some data are conflicting
- in utero transmission does occur, although it is uncertain if HIV infection occurs during delivery
- the role of breast-feeding in transmission remains unclear, although the risk seems smaller than from congenital or perinatal transmission
- the morbidity and mortality associated with perinatal HIV infection is very high in Africa

PARENTERAL TRANSMISSION

Virtually everyone who receives a transfusion with HIV-infected blood develops HIV infection:

- pregnant women and children receive a disproportionately high number of transfusions
- children with sickle-cell disease frequently receive transfusions
- attempts to develop a profile of high-risk blood donors have not been successful in Africa

CONCLUSION

HIV in Africa is much more complex than originally thought:

- future developments may be difficult to predict
- the epidemic has not yet reached a stable situation in many populations
- HIV infection will probably have a profound impact on other health problems



THE EPIDEMIOLOGY OF HIV/AIDS IN AFRICA

Peter Piot
Jeffrey Harris

INTRODUCTION

Although HIV infection has rapidly become a global problem, its epidemiologic features vary in different parts of the world. Three general epidemiologic patterns of HIV infection and AIDS can be distinguished worldwide:

Pattern I is found in North America, Western Europe, Australia and New Zealand. With this pattern, a large predominance of AIDS cases are among homosexual men and intravenous drug users.

Pattern II occurs in sub-Saharan Africa and parts of the Caribbean. Here the primary mode of spread is by heterosexual contact, followed by perinatal transmission and transmission through blood transfusion.

Pattern III is found in Eastern Europe, North Africa, Asia and the Pacific. In these areas, there are relatively few cases of AIDS. Most cases have resulted from contact with Pattern I or Pattern II countries, although HIV is currently spreading in various populations at high risk.

Latin America is classified by the World Health Organization (WHO) as Pattern I/II because of a shift in epidemiologic pattern from Pattern I towards Pattern II.

Events in South America and Thailand indicate that the above patterns are not absolute. It appears logical that:

- many countries are moving towards pattern II;
- within each pattern there is much heterogeneity, or diversity.

In this chapter, Africa will be used as an example of this shifting pattern and heterogeneity.

Because a correct understanding of the local epidemiologic situation is an essential requirement for a successful control and prevention program, we will also discuss:

- recent data on the distribution of HIV/AIDS in sub-Saharan Africa;
- determinants interacting with the spread of HIV in populations.

AIDS Surveillance

By the end of 1990, more than 83,000 cases of AIDS were reported from Africa to WHO. However, because of technologic and organizational problems, disease surveillance in general has been fairly poor in Africa, and it is estimated by WHO that the actual cumulative number of cases of AIDS in Africa approaches 250,000. Countries with the highest reported rates of AIDS cases are situated in the central and eastern part of the continent. They include Congo, Uganda, Burundi, Rwanda and Zambia. It is important to remember, however, that these rates may reflect a functioning disease-monitoring system within these countries rather than a higher incidence of the disease.

In general, surveillance of AIDS in Africa is based on a clinical case definition which does not require laboratory tests or technically demanding diagnostic procedures. The criteria used in the definition for AIDS in adults are shown in Figure 1-1 below.

FIGURE 1-1

CLINICAL CASE DEFINITION OF AIDS FOR SURVEILLANCE

PROVISIONAL WHO CLINICAL DEFINITION FOR AIDS IN ADULTS WHEN DIAGNOSTIC RESOURCES ARE LIMITED

AIDS in an adult is defined by the existence of at least two major signs associated with at least one minor sign, in the absence of known causes of immunosuppression, such as cancer or severe malnutrition or other recognized etiologies.

MAJOR SIGNS

Weight loss > 10% of body weight
Chronic diarrhea > 1 month
Prolonged fever > 1 month

MINOR SIGNS

Persistent cough for > 1 month
Generalized pruritic dermatitis
Recurrent herpes zoster
Oropharyngeal candidiasis
Chronic progressive and disseminated herpes simplex infection
Generalized lymphadenopathy

The presence of generalized Kaposi's sarcoma or cryptococcal meningitis is sufficient alone for the diagnosis of AIDS.

WHO, 1986.

Limited evaluation of this case definition in different populations has shown that when a positive HIV antibody test is used as the "gold" standard, there is a:

sensitivity of 60% to 70%;

a specificity of 80% to 90%.

Use of this clinical case definition has enabled surveillance for AIDS to be relatively easily and economically carried out in most African hospitals; however, its predictive value will obviously be

quite low in populations with a low rate of AIDS. Therefore, some limited evaluation of the case definition against HIV serology is advised in all countries.

A similar case definition in children is much less accurate, thus limiting attempts to quantify the burden of AIDS in children. This problem is also seen with the difficulty in arriving at differential diagnosis of tuberculosis, which is another common endemic disease in much of Africa.

Most AIDS cases in Africa are reported from the major cities. Beyond this fact, there appear to be more differences than similarities:

In Central and East Africa the male-to-female ratio among AIDS cases is one or less.

In cities such as Abidjan and Dakar in West Africa, there are two to four times more male AIDS patients.

It is not clear yet whether these differences are real or reflect some selection bias because they are based on hospitalized patients only. However, these differences also appear in seroprevalence surveys. This suggests that the patterns of spread may indeed be different.

HIV INFECTION

Seroprevalence

Numerous seroprevalence studies have been conducted throughout Africa. Most such studies have involved convenience samples or groups of people who were likely at high risk of infection. It is unclear how representative these samples are of the population.

Rwanda and Uganda have undertaken a large nationwide serologic survey on a representative sample of the population:

The Rwandan survey was performed in 1987, and shows that over 20% of urban adults between 20 and 40 years of age had HIV antibody, as compared to 2% of rural adults of the same age group. The overall HIV seroprevalence rate in this largely rural country was estimated at 4%.

In the rural Rakai district in Uganda, 12% of the rural adult population was found to be infected in a similar survey. Residents of urban trading centers in Uganda had the highest prevalence rates.

Although these sobering figures should not be extrapolated to the rest of the continent, they definitely indicate a serious problem in two African countries most severely hit by AIDS. By comparison, regional surveillance in OCEAC, the member states of West Central Africa showed much lower seroprevalence rates, from less than 1% to 1%, in the adult population of these countries.

Sentinel surveillance is increasingly used to monitor trends of HIV infections in the population. Sentinel surveillance is:

- less expensive;
- more acceptable to the population;
- easier to organize.

For example, pregnant women are one group that can be reached easily, and those reached tend to be more or less representative of the female population of reproductive age. However, infertile women are not represented in such samples, and the exclusion of infertile women may lead to an underestimation of HIV infection rates, since infertile women often have a history of other sexually transmitted diseases (STDs). Preliminary data from Kinshasa does suggest good concordance of HIV antibody prevalence rates between pregnant women and a random sample of the female adult population.

Figure 1-2 shows seroprevalence rates in different populations, mostly of urban origin:

FIGURE 1-2

HIV ANTIBODY PREVALENCE RATES IN PREGNANT WOMEN IN SELECTED COUNTRIES IN AFRICA

Country/City	Year	Number tested	% HIV positive
Burkina Faso, Ouagadougou	1985-87	58	1.7
Burundi, Bujumbura	1986	925	16.3
Congo, Brazzaville	1988	1833	3.9
Cote d'Ivoire, Abidjan	1988	537	9.3*
Guinea-Bissau, Bissau	1989	3247	6.5*
Kenya, Nairobi	1987	1100	2.0
Malawi, Blantyre	1989	214	16.4
Mali, Bamako	1987	238	1.0*
Mozambique, Maputo	1988	500	1.0*
Rwanda, Kigali	1989	800	29.0
Senegal, Dakar	1988	1400	0.1*
Tanzania, Dar es Salaam	1987	192	3.6
Tanzania, Arusha	1987	144	0.7
Tanzania, Bukoba	1987	100	16.0
Uganda, Kampala	1989	395	23.5
Uganda, Kampala	1987	170	23.4
Zaire, Kinshasa	1988	8108	5.8
Zaire, Kinshasa	1983	500	3.0
Zaire, Equateur (province)	1986	136	2.0
Zambia, Lusaka	1986	184	8.7
Zambia, Lusaka	1987	1954	11.6

From: Andreassen et al, 1987; Brun-Vézinet et al, 1987; Carswell et al, 1988; De Cock et al, 1988; Lallemand et al, 1989; Le Guémo, 1989; Lepage et al, 1989; Mhalu et al, 1988; Namaara et al, 1989; Nzila et al, 1987; Piot et al, 1987; Ryder et al, 1989; Standaert et al, 1989; Chiphangur et al, 1989; Kanki et al, 1987; Hira et al, 1989.

*includes HIV-2

In general, the rates shown in Figure 1-2 indicate:

- very high (greater than 15%) infection rates in the cities of inner-central African countries (Uganda, Rwanda, North West Tanzania);
- moderately high rates (5% - 10%) in other central African countries;

much lower rates (less than 3% to less than 1%) in other parts of the continent, with the exception of Côte d'Ivoire for HIV-1 infection and Guinea Bissau for HIV-2 infection.

Figure 1-3 below illustrates some prevalence rate data:

FIGURE 1-3

HIV ANTIBODY PREVALENCE RATES IN SELECTED POPULATIONS IN SUB-SAHARAN AFRICA

Type of population	Country/city	Year	Number tested	% HIV positive
Hospitalized patients	Côte d'Ivoire, Abidjan	1988	1715	40.0*
	Côte d'Ivoire, Dabou	1989	186	29.6
	Guinea-Bissau, Bissau	1989	410	17.5*
	Kenya, Nairobi	1989	500	20.0
	Tanzania, Karagwe	1987	253	4.3
	Zaire, Kinshasa	1988	236	49.6
	Zambia, Lusaka	1986	233	13.7
	Tuberculosis patients	Benin, Cotonou	1987	106
Burundi, Bujumbura		1986	328	54.5
Côte D'Ivoire, Abidjan		1988	338	24.0*
Guinea Bissau, Bissau		1987	614	15.8*
Mali, Bamako		1987	177	5.0*
Tanzania, Mbeya		1989	98	24.5
Zaire, Kinshasa hospitalized		1987	234	36.3
outpatients		1987	509	16.7
Female prostitutes/barmaids	Benin, Cotonou	1987	133	8.2*
	Burkina Faso, Ouagadougou	1989	292	27.9*
	Cameroon, Yaounde	1989	168	7.1
	Central African Rep., Bangui	1986	179	20.6
	Cote d'Ivoire, Abidjan	1987	101	20
	Congo, Brazzaville	1987	67	34.3
	Gambia	1988	264	26.2
	Kenya, Nairobi	1987	286	61
		1988	NA	89
	Ethiopia, Addis Ababa	1989	330	18.2
	Madagascar	1985-86	58	0
	Liberia, Monrovia	1987	30	0
	Malawi, Blantyre	1986	265	56
	Mali, Bamako	1987	230	38
	Niger	1989	604	5.8
	Nigeria, Calabar	1989	616	1.1
	Nigeria, Lagos	1988	117	7
	Rwanda, Butare	1984	33	88
	Senegal, Kaolack	1989	212	27.8
	Uganda, Rakou	1987	NA	86
	Tanzania, Dar es Salaam	1986	225	29
	Tanzania, Arusha	1986	42	0
	Zaire, Kinshasa	1989	801	37.2
	Zaire, Equateur province	1986	283	11

Braun et al, 1989; Brinde et al, 1989; Colebunders et al, 1989; De Cock et al, 1989; Denis et al, 1987; Gunther et al, 1987; Hassig et al, 1989; Hemed et al, 1989; Kaptué et al, 1989; Laga et al, 1989; Lavreys et al, 1989; Mann et al, 1988; Mboug et al, 1989; Melbye et al, 1986; Mhalu et al, 1988; Naucleteral, 1989; Nzila et al, 1989; Pepin et al, 1989; Plummer et al 1990; Sangaré et al, 1989; Standaert et al, 1989; Van de Perre et al, 1985; Williams et al, 1989; Zohoun et al 1988; Georges et al, 1987; M'pele et al, 1987; Mintz et al, 1988; Akinsete et al, 1989.

*includes HIV-2 infection

The prevalence rate data from Figure 1-3 reinforces several points:

Female prostitutes and patients with STDs are sentinel groups that have consistently shown the highest prevalence rates of HIV antibody in Africa, with infection rates now approaching 100% in some groups. These prevalence rates reflect the predominantly heterosexual transmission of HIV in Africa and support the concept of core transmitter groups in the spread of this virus.

Monitoring HIV prevalence in patients with tuberculosis may also be an effective sentinel warning system in areas not yet known to be heavily infected with HIV. Tuberculosis patients exhibit higher HIV infection rates than the general population (see Figure 1-3 on previous page). This seems to be because immunosuppression to HIV infection reactivates asymptomatic infection with *Mycobacterium tuberculosis*.

Hospitalized patients offer some indications of the burden of AIDS on health services. Thus, in Kinshasa, Zaire, 50% of all internal medicine admissions to Mama Yemo Hospital in 1988 were HIV positive; and in Abidjan, Côte d'Ivoire, between 15% and 20% of all male patients in medical wards in 1988 had AIDS, which is remarkable for a city where AIDS was only recognized as late as 1985. This example illustrates how fast HIV can spread, and that the disease has become well established in West Africa.

INCIDENCE AND FORECASTING

Very few real seroincidence data are available from Africa, because these data can only be obtained in longitudinal cohort studies. However, there are results from cohort studies among hospital workers and employees of two large companies in Kinshasa where data revealed an annual seroincidence for HIV of 1% to 2%. The rate was much higher in two separate studies of cohorts of female prostitutes: in Nairobi, Kenya, the annual incidence rates were as high as 50%; in Kinshasa, a 10% rate was observed.

Serial seroprevalence surveys at regular intervals, in the same sentinel populations mentioned earlier, offer an alternative approach to determining trends in HIV infection. Serial seroprevalence surveys have now been performed in several cities, mainly among:

- pregnant women;
- blood donors;
- STD patients;
- female prostitutes.

Populations at high risk for HIV infection, such as STD patients and prostitutes, show strong increases in HIV seroprevalence rates; this is rarely the case in samples more representative of the general population. However, even in the populations that are not at particularly high risk, HIV appears to spread more rapidly in some areas than in others:

Over a period of two to three years, HIV seroprevalence rates more than doubled in pregnant women in Kampala, Uganda, and selected samples in the general population in the Central African Republic showed similar increases.

In Kinshasa, however, seroprevalence rates remained fairly stable over a five-year period.

These foregoing data should be viewed with much caution, but the differences are so striking that they suggest some real geographic heterogeneity in the spread of HIV. Figures 1-4 and 1-5 offer a visual perspective:

FIGURE 1-4

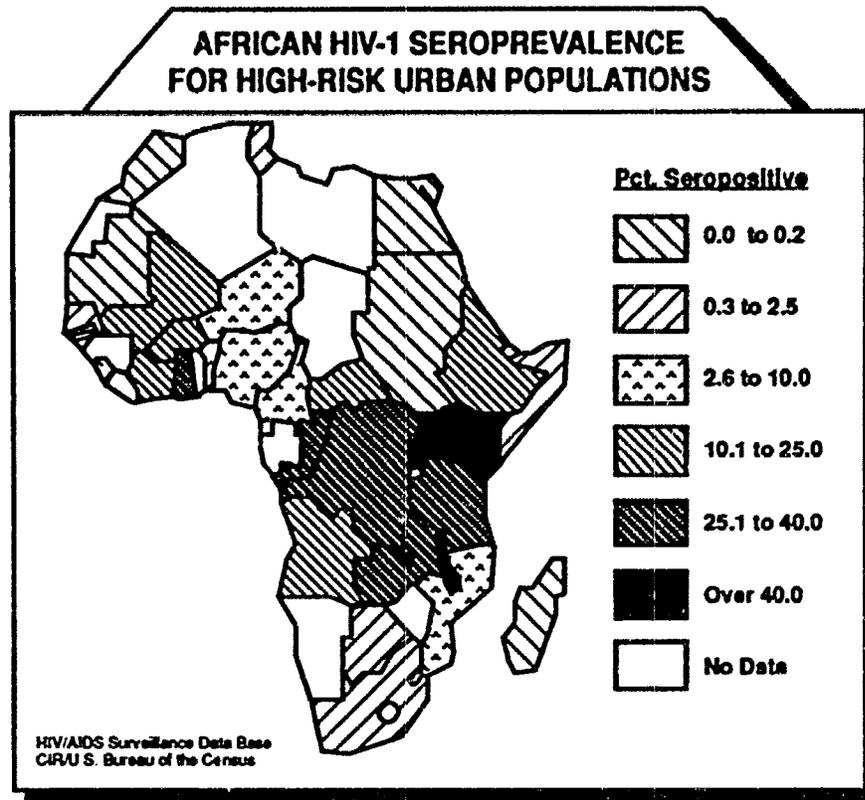
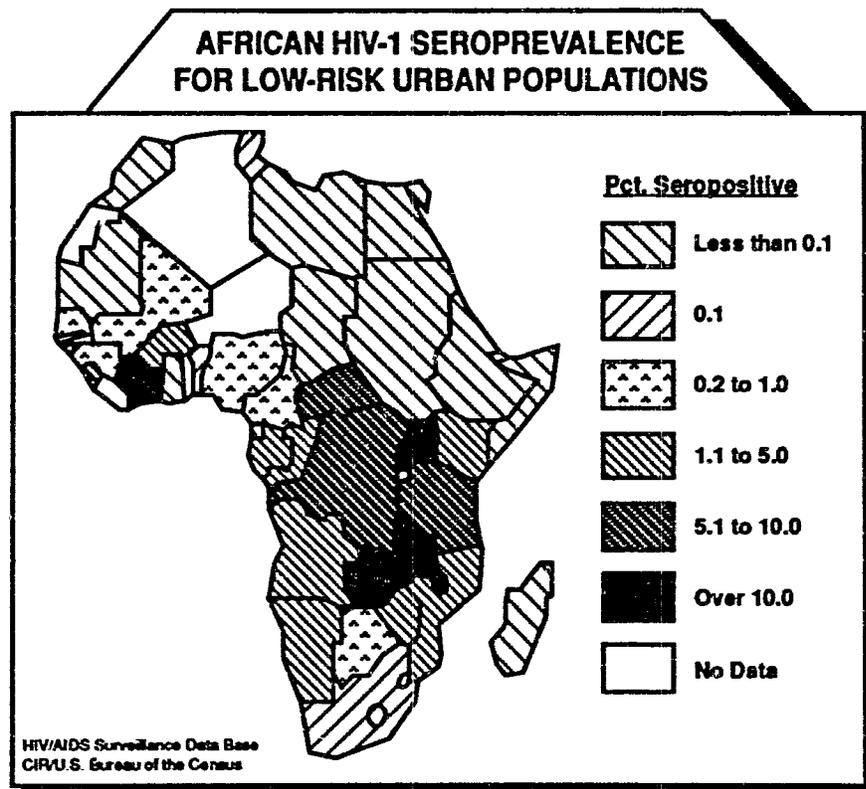


FIGURE 1-5



(Figures 1-4 and 1-5. Seroprevalence of HIV in Africa from Torrey and Way, U.S. Bureau of the Census, April 1990)

These estimates lead to the conclusion that during the year 1991 alone, a total of over 200,000 new AIDS cases will occur in Africa, and that by the year 2000 a cumulative total of one million cases will have occurred in Africa. The WHO projections of HIV infection in Africa will have increased three or four times from 1988 to the year 2000, yielding 7.5 million to 10 million infected individuals. However, the accuracy of these (or any) projections for the next decade are uncertain, since there are many unknowns in the AIDS epidemic, including:

- the natural history of HIV infection;
- sexual behavior patterns in different populations;
- the impact of prevention programs currently being implemented.

HIV-2

HIV-2 is a human immunodeficiency virus distinct from HIV-1. HIV-2 occurs mainly in West Africa. Because this virus also can lead to AIDS, it must be included in a discussion of African HIV/AIDS epidemiology. Unfortunately, the prevalence of HIV-2 is still poorly documented, partly because of the difficulty in serologically diagnosing HIV-2 infection accurately.

The highest HIV-2 seroprevalence rates have been found in Guinea-Bissau, where 8.9% of adults were HIV-2 antibody positive in a community-based survey in the capital city of Bissau. Prevalence rates in pregnant women and blood donors in other West African countries were generally lower (0.1% to 3%), but as is the case of HIV-1 infection elsewhere, female prostitutes exhibited much higher rates (20% to 60%).

HIV-2 seems to have been present for a longer time in West Africa than HIV-1. In addition, HIV-1 is rapidly becoming the predominant human retrovirus in most West African countries. This suggests that:

- HIV-2 spreads at a slower rate than HIV-1;
- HIV-2 may be less easily transmissible.

Preliminary data suggest that:

- HIV-2 occurs mainly in the same groups as HIV-1;
- heterosexual transmission is the major mode of spread of HIV-2.

VARIABLES INFLUENCING THE SEXUAL SPREAD OF HIV IN POPULATIONS

The reasons for the heterogeneity in the spread of HIV in Africa (or elsewhere) are not well understood. The interaction of the factors shown in Figure 1-6 on the next page determines the pattern of spread of HIV in a population, especially in a sexual context:

FIGURE 1-6

**VARIABLES INFLUENCING THE SPREAD OF
HIV INFECTION IN POPULATIONS**

DEMOGRAPHIC VARIABLES

Proportion of "sexually most active"
age groups
Male-to-female ratio in the population
Rapidly of urbanization
Population movements
Communications along major roads

BEHAVIORAL VARIABLES

Rate of partner change
Types of sexual intercourse, such as: receptive
anal intercourse, intercourse during menses
Rate of contact with, and size of core groups
Behavior of and infection rate of partners, such
as: intravenous drug use and bisexuality

BIOLOGIC VARIABLES

Presence of other sexually transmitted
diseases
Clinical stage of HIV infection
(degree of CD4-cell depletion)
Infectivity of viral strains
Male circumcision (?)

POLITICAL/ECONOMIC VARIABLES

Performance of health care system
Overall response to the epidemic
War, civil disturbance

(from Piot et al, J. AIDS 1990)

Demographic Variables

The demographic structure of the population in Africa and elsewhere in the developing world plays a major role in a general incidence of STDs that is higher than the incidence in most of the industrialized world.

This is primarily because the most sexually active age groups represent a much larger proportion of the population than that of North America or Europe. With continuing high population growth rates, these sexually active groups will become even larger in the near future.

Political/Economic Variables

Variables possibly favoring HIV spread include:

- rapid urbanization;
- gross inequalities in the male-to-female ratio in many large African cities;
- the existence of major transcontinental roads.

Behavioral and Biologic Variables

These variables are thought to be associated with a higher rate of partner change and more frequent contacts with highly infected core groups. This concept of core groups has been important in understanding the epidemiology of gonorrhea, and is probably as important for HIV infection. Core groups are:

- not always easily identifiable;
- certainly not limited to female prostitutes, as is sometimes suggested.

Core groups may also include:

- clients of prostitutes;**
- mobile individuals such as truck drivers;**
- the military;**
- young people with multiple partners.**

In general, sexual behavior patterns that involve contacts with a small but highly infected core group are associated with the most rapid spread of HIV.

Cultural factors may contribute to other predominant sexual patterns in many populations and countries. This is especially relevant where a dynamic interaction of individuals with simultaneous or serial lovers prevails. These interactions lead to a more limited exposure of infected individuals to others, and probably results in a slower spread of HIV, at least during the initial phase of the epidemic when the prevalence of HIV infection in the general population is still low.

Taken together, demographic, behavioral, cultural, biologic, and political/economic variables must be better understood in the context of sexual transmission. Patterns in different communities will be important in order to:

- formulate appropriate messages in primary prevention programs;**
- define priority areas for interventions.**

Over 80% of all cases of HIV infection in Africa involve persons who acquired their infection through heterosexual intercourse. In general, risk factors for HIV infection are the same as those known for sexually transmitted diseases in Africa. The groups with high rates of STDs are now experiencing the highest rates of HIV infection. The risk factors may include:

- young age;**
- a high number of sex partners;**
- a history of traveling;**
- urban residence;**
- sex with prostitutes.**

Female prostitutes probably play an important role in the spread of HIV in many parts of Africa, although the proportion of new cases of HIV infection in African men acquired through contact with prostitutes is not known. It is often difficult to define prostitution using Western criteria. In many areas of Africa other core groups of frequent transmitters also probably contribute significantly to the sexual spread of HIV. More research is needed to:

- identify core groups in different countries;**
- define the behavioral and social determinants which are of potential benefit in intervention programs.**

It will also be important to more precisely define local sexual behavioral patterns and networks and their relationship to the spread of HIV. For example, in Kinshasa age-specific female-to-male HIV prevalence rates varied widely with age:

The HIV infection rate in Kinshasa women between the ages of 15 and 25 years old was nearly five times that found in men of the same age.

The female-to-male ratio fell to approximately one between the ages of 25 and 35 years.

After the age of 35, there were nearly two cases of HIV infection in men for every case in a woman.

A likely explanation of these findings includes the following observations:

In this city, young women may be more sexually active than young men.

Many of these young women have sex with older men.

Older men may be more sexually active than younger men, and may have more contacts.

Another community-based study in Kinshasa was of couples with one infected partner:

Approximately 15% of the spouses were also infected. This pattern of infection has also been found in clinic-based studies in North America and Europe.

In Kinshasa, the number of infected wives with uninfected husbands was the same as the number of infected husbands with uninfected wives. This indicates that, in this population at least, equal numbers of both sexes are engaged in pre- or extramarital sex with infected persons.

Most instances of heterosexual transmission of HIV in Africa appear to involve only penile-vaginal intercourse, although North American and European studies indicate receptive anal intercourse also increases the risk of acquisition of HIV in women. No particular sexual practices have been implicated in the sexual transmission of HIV in Africa. It is still not clear whether the efficiencies of male-to-female and female-to-male transmissions of HIV are similar. If there is a difference, it does not seem to be large, as evidenced from studies in couples.

The risk of sexual transmission of HIV varies greatly among individuals. The average rate of HIV transmission from a single sexual contact seems low, but has not been accurately defined. Some people do become infected after only one contact with an infected person, whereas other people do not become infected even after hundreds of sexual encounters with an infected partner. There is growing evidence that the infectivity of an infected individual and/or the susceptibility of an exposed uninfected person can be influenced by at least two biologic factors:

the presence of other STDs;

the degree of immunodeficiency.

The data from several cross-sectional and prospective studies in different parts of Africa suggest that some STDs increase the risk of sexual transmission of HIV. This increased risk has been consistently found for persons infected with:

- genital ulcers;
- genital chlamydial infection (in the few studies which have addressed the question);
- trichomoniasis.

Women who seroconverted for HIV antibody had a much higher incidence of these STDs prior to seroconversion when compared to women who remained seronegative. This association remained after controlling for sexual exposure and condom use. In addition:

One study in Nairobi suggests that women with HIV infection who concomitantly have a genital ulcer are more infectious for their sex partners than HIV-infected women without such ulcers. Moreover, HIV can be isolated from the base of these ulcers. In the case of genital ulcers, increased susceptibility to HIV may be due to a disruption of the integrity of the genital epithelium.

In the case of STDs associated with an inflammatory response, susceptibility may be due to an increased pool of target cells (CD4+ lymphocytes) at the genital site. An increased infectivity may result from an increased number of HIV-containing monocytes due to a genital infection.

Several studies have shown that individuals with a more profound immunodeficiency or a more advanced clinical stage of disease have higher titers of infectious virus, and are probably more infectious for their sex partners.

Regardless of these studies, however, it is important to remember that asymptomatic individuals remain the largest source of HIV infection.

Other factors may influence heterosexual transmission of HIV at the local genital level:

- sex during menses, which increases the risk of female-to-male transmission;
- oral contraception;
- lack of male circumcision.

Oral contraception and lack of male circumcision have been tentatively implicated as risk factors for HIV transmission in studies in Kenya. This potential transmission link has not been confirmed, and it is premature to draw any conclusions.

It is important to realize that sexual transmission does occur in the absence of the facilitating factors mentioned above, and that:

determinants influencing HIV transmission are still incompletely understood;

transmission is not an all-or-nothing phenomenon;

explanations focusing on a single risk factor are too simplistic.

TRANSMISSION FROM MOTHER TO CHILD

Since HIV in Africa is predominantly transmitted by heterosexual contact, a substantial and growing proportion of women of childbearing age in many sub-Saharan countries are now infected with HIV (see Figure 1-2). Our understanding of the impact of these infections on pregnancy and on infants and children continues to evolve.

HIV infection appears to adversely affect pregnancy outcome, although data are somewhat conflicting:

In prospective and case-control studies in Congo, Kenya, Rwanda, and Zaire, maternal HIV infection was significantly associated with premature delivery, low birth weight and stillbirth.

Such an association was not found in similar studies in pregnant intravenous drug users in the United States and Europe.

These conflicting outcomes may be due to differences between the studies in the stage of HIV infection in the mother and in the occurrence of other risk factors for adverse pregnancy outcome, such as IV drug use itself. The biologic basis for these complications is not yet clear.

In addition, the risk and mechanism(s) of perinatal HIV transmission have not been well defined. It is known that in utero transmission does occur, as evidenced by case reports on the isolation of HIV from fetal tissues. However, it is uncertain whether or not neonates can also acquire HIV infection during delivery.

A major problem in the study of congenital perinatal transmission of HIV is the lack of precise diagnostic criteria for HIV infection in neonates and infants. Recently introduced techniques, such as gene amplification, are yielding promising results in this area.

On the basis of clinical evolution (development of AIDS) and/or presence of HIV antibody after 12 months, it is now estimated that 25% to 40% of infants born to HIV seropositive women acquire the infection from their mother. Mothers with low CD4+ lymphocytes counts and more advanced immunodeficiency appear to more easily transmit the virus to their offspring. This phenomenon is similar to what is seen with sexual transmission.

The role of breast-feeding in mother-to-child transmission remains unclear. Anecdotal reports suggest that infants can be infected by breast-feeding from an HIV-positive mother, and the virus

has been isolated from human milk. However, it is not clear how often infants who were not infected in utero or at birth acquired HIV infection from their breast-feeding seropositive mother:

Data from Zaire showed that the risk of HIV infection through breast-feeding was low relative to transmission before or during birth.

A study in Zambia found that infants who were breastfed by HIV-infected mothers acquired HIV infection more often than infants who received bottle-feeding exclusively.

It does seem, however, that the risk of HIV transmission is much smaller through breast-feeding than from congenital or perinatal transmission. In populations with a high incidence of infant and child mortality as a result of various infections, promotion of breast-feeding is one of the most effective preventive strategies against child mortality. The current data do not indicate a need to change this policy, even in areas with a high prevalence of HIV infection.

The morbidity and mortality associated with perinatal HIV infection is very high in Africa. In prospective studies in children born from HIV-positive mothers in several African cities, the mortality rate before the age of one year was 20% to 40%. In a study in Kinshasa:

Another 20% of the perinatally infected children died between one and two years; another 10% had developed AIDS by the age of two years.

Diarrhea and pneumonia were among the leading causes of death in infants born to seropositive women.

The case fatality rate of common infections such as measles increased in children with HIV infection.

In addition, having a mother with HIV/AIDS may put a child at increased risk of suffering adverse consequences from endemic childhood infections and malnutrition. It is also possible that some morbidity due to perinatal HIV infection will only become apparent in these children at a later age, as suggested by several case reports from Europe.

It is clear now that perinatal transmission of HIV will have a negative impact on child survival in several parts of Africa. This will primarily depend on the current and future prevalence of HIV infection in pregnant women. In cities like Kampala or Kigali, up to 20% of all infant deaths may currently be due to HIV, and in Kinshasa it was estimated that HIV has increased the infant mortality rate by 15%. These figures will undoubtedly increase in many countries.

PARENTERAL TRANSMISSION

Receipt of a transfusion with HIV-infected blood is probably the most efficient mode of acquiring HIV infection. Virtually everyone who receives a transfusion with HIV-infected blood develops HIV infection.

Although transmission of HIV infection through blood transfusion is virtually eliminated in the industrialized world, it continues at an unacceptable rate in many developing countries, particularly in those with poor transfusion services. It is estimated that up to 10% of adults with

AIDS in Africa may have been infected by blood transfusion. This proportion may be as high as 25% in children. There are a number of factors which contribute to this high rate:

Pregnant women and children receive a disproportionately high number of transfusions, particularly in malaria endemic areas and in populations with a high rate of anemia. As there is an increase in drug-resistant malaria in Africa, malaria-induced anemia may also increase. This could exacerbate the problem of HIV-associated blood transfusions.

Children with sickle-cell disease also frequently receive blood transfusions, and high HIV seroprevalence rates have been found in this group.

Eliminating HIV infectious blood products from the pool of blood available for transfusion could prevent this problem. However, attempts to develop a clinical/epidemiological profile of high-risk blood donors (as used in the industrialized world) have not been successful in Africa.

While the contribution of contaminated injections to the spread of HIV in Africa remains an unresolved question, HIV can undoubtedly be transmitted by injection. Intravenous injection is the most efficient mode, as evidenced by the HIV epidemic in intravenous drug users and by anecdotal reports of HIV infection after accidental needle sticks in health care workers. Cross-sectional studies have found an association between HIV antibody and medical injections, but this may be due to a higher morbidity in people with HIV infection. Thus far, cohort studies in Africa have failed to implicate injections in the spread of HIV, suggesting that the population attributable risk is small or very small.

CONCLUSION

In general, we can say that:

the emerging picture of the HIV epidemic in Africa is much more complex than originally thought;

future developments may also be more difficult to predict;

the epidemic has not yet reached a stable situation in many populations;

although there is no current documentation, HIV infection will probably have a profound impact on other health problems, such as the impact already demonstrated for tuberculosis.

At this point in time our knowledge of the scope and nature of the epidemiology of HIV/AIDS in Africa can be summarized as follows:

AIDS and HIV infection continue to spread:

within infected populations, but at variable rates;

to new populations in West Africa;

from urban to rural populations.

There is no real change in our belief about modes of transmission:

Sexual intercourse transmissions are most prevalent.

Perinatal transmissions are growing rapidly.

Our knowledge of risk factors continues to grow:

The biologic variables range from the possibility of transmission from single sexual contact to the question of whether or not uncircumcised men are implicated.

The role of other STDs continues to be important.

The behavioral data base is quite poor, although the number of sexual partners seems overwhelmingly important.

And finally, it is important to remember that we are just beginning to understand the relationship of AIDS/HIV infections to other health problems, with a special emphasis on diseases that kill children, and tuberculosis.

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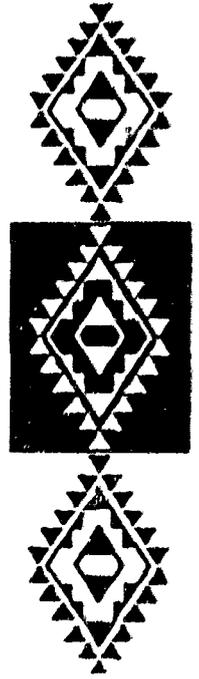
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HIV TESTING



PREVIEW:

HIV TESTING

INTRODUCTION

Tests for HIV antibodies are used as tools to:

- screen blood
- support clinical diagnosis
- describe the epidemic by surveillance
- evaluate the effect of interventions

NATIONAL HIV TESTING STRATEGY

Integrated programs begin with assessment of needs and identification of resources for:

- blood transfusion systems
- diagnostic services
- disease surveillance systems

HIV TESTING NETWORK

Ideal networks include:

- national reference lab
- peripheral labs for HIV screening, diagnostic, and surveillance support

PREDICTIVE VALUES IN HIV TESTING

Predictive value is influenced by:

- sensitivity of test
- specificity of test
- prevalence of antibodies to HIV in the population

HIV TESTING CONSIDERATIONS

Serology is the most practical method.

Important considerations when choosing a test:

- compatibility with country's test systems
- prevalent virus strains
- versatility of test format
- cost and availability
- maintenance & technical support

SPECIMEN COLLECTION AND HANDLING

Quality results of serum or plasma tests depend on:

- following manufacturer's instructions
- avoiding contamination
- using standardized supplies

SCREENING TESTS FOR ANTIBODIES TO HIV

- ELISA is most common
- simple rapid immunobinding tests and agglutination tests are better adopted to some labs

SUPPLEMENTAL TESTS FOR ANTIBODIES TO HIV:

- the Western blot is commonly used as a supplemental test

Other techniques:

- line immunoassays
- specific protein ELISAs
- Indirect Immunofluorescence Assay (IFA)
- Radioimmunoprecipitation Assay (RIPA)
- ELISA and agglutination assays

QUALITY ASSURANCE IN HIV TESTING

A national program is important to:

- ensure accurate test results
- evaluate training
- initiate use of new techniques

LABORATORY SAFETY

Lab workers must adhere to universal infection control precautions to reduce risk by:

- using barrier precautions to prevent exposure to blood
- washing hands and skin immediately after exposure
- preventing injuries by sharp objects
- avoiding mouth pipetting
- decontaminating lab surfaces

COUNSELING

Lab personnel can assist in:

- educating infected individuals to avoid infecting others
- helping uninfected individuals reduce risk of becoming infected

TRAINING

It is important to incorporate HIV testing techniques in:

- lab technician school curricula
- in-service training programs for certified lab technicians

**Sheila Mitchell
Souleymane Mboup**

INTRODUCTION

The human immunodeficiency virus (HIV) was first isolated in 1983¹ and identified as the etiologic agent of AIDS. Once the virus was isolated, several methods were developed to detect HIV infection, and the technology has since rapidly evolved. The development and implementation of such technology has had both a positive and negative impact on most African countries. Many laboratories and blood transfusion systems are benefiting from this focused attention on HIV prevention and control. As a result of the emphasis being placed on HIV testing, more attention is being placed on laboratory safety issues, supply networks, quality assurance, training, confidentiality, data management, and improved blood transfusion practices. However, the AIDS epidemic has required training in new techniques and acquisition of new equipment, resulting in reallocation of scarce human and financial resources, and in many cases has created competition for resources from other programs.

HIV testing plays an important role in the National AIDS Control Plan of all countries. Tests for HIV antibodies are used as:

- a screening tool to prevent the transmission of HIV through transfusion of blood or blood products;**
- a diagnostic tool to support the clinical diagnosis of AIDS and other HIV-related conditions;**
- a surveillance tool to describe the epidemic;**
- an evaluation tool in determining the effect of interventions.**

DEVELOPING A NATIONAL HIV TESTING STRATEGY

Developing an integrated program for HIV testing begins with an assessment of needs and identification of resources. This should include a close examination of:

- blood transfusion systems;**
- diagnostic services;**
- disease surveillance systems within the country.**

It is necessary to explore the:

- commodity delivery systems;**
- level of human and equipment resources;**
- availability of funds;**
- training needs.**

The country's ability to sustain the testing program once established must be assessed. Long-term goals must be addressed as well as immediate needs. Issues such as maintenance of equipment, cost of supplies, delivery systems, quality assurance programs, and continuing education must be examined. It is important to plan a program that combines resources to efficiently address prevention, diagnosis, surveillance, and evaluation and to integrate these programs into the existing infrastructure whenever possible.

HIV testing is usually introduced into a country in a stepwise manner. Testing of blood donors in areas of highest seroprevalence and in the most densely populated regions is given highest priority. Testing centers are placed strategically throughout the country and relied upon to provide testing services for the surrounding hospitals. It is not practical for all laboratories to assume the responsibilities of screening and supplemental testing because standard testing strategies are both expensive and technically complex. It is essential to develop laboratory networks. A laboratory network is a system of peripheral laboratories performing the most simple screening tests and feeding into a centrally located reference laboratory which confirms reactive screening results, serves as a supply distribution center, supervises the quality assurance program, and serves as a training center.

Ideally, the existing laboratory infrastructure should be strengthened and expanded to include HIV testing. The private sector should be included in the national plan to enable efficient use of resources. Existing supply networks for drugs and vaccines are one example of a system that can be expanded to include delivery of HIV test kits utilizing the developed cold chain. The same system could be used to distribute serum proficiency panels for the Quality Assurance Program and for sending specimens to the reference laboratory for supplemental testing. Efficient use of equipment and reagents should be encouraged. It is not necessary to separate laboratories for screening blood for transfusions, diagnosis, and surveillance testing. In many cases one laboratory can provide the testing services for several blood transfusion facilities as well as provide the diagnostic and surveillance support. This not only saves on equipment but makes more efficient use of the test kits which were designed for testing in large batches.

In developing a plan for HIV testing at any level, the following components should be addressed:

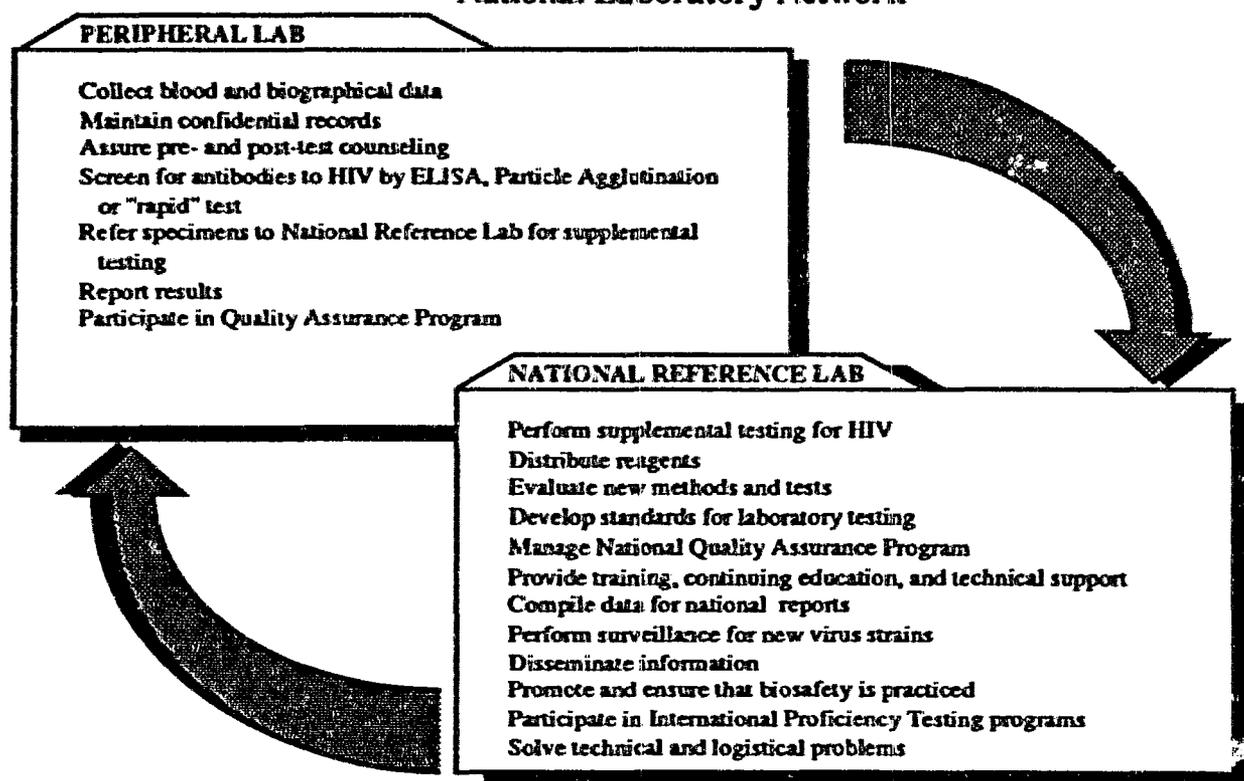
- screening tests;
- supplemental tests;
- data management;
- reporting of results;
- pre- and post-test counseling;
- use of test results.

Laboratory workers must be reminded of the importance of confidentiality and realize the potential impact of indiscriminate revelation of test results. Well developed counseling plans are important because HIV testing provides an opportunity for education in HIV prevention whether the results are negative or positive.

HIV Testing Network

It is recommended that an HIV testing network be established to make the most efficient use of resources, to provide the most complete coverage of HIV testing, and to facilitate communications and supply. Ideally the network consists of peripheral laboratories which generally perform HIV screening for blood transfusions, diagnostic support, and occasionally surveillance. The peripheral labs are supported by a referral center often designated as the National Reference Laboratory. There may be intermediate level laboratories that perform some of the responsibilities of the reference lab, such as supplemental testing and training, but the National Reference Laboratory is an important and integral part of all National AIDS Control Plans. The responsibilities of the various components of a National Laboratory Network are detailed in Figure 2-1.

**FIGURE 2-1
National Laboratory Network**



Predictive Values in HIV Testing

No matter how accurate the test is or with what precision the test is performed it is important to measure the diagnostic accuracy of each test in the population in which it will be used. The predictive value is used to measure the accuracy of a test in classifying individuals as infected or noninfected. The predictive value is influenced by the sensitivity and specificity of the test, and the prevalence rate in the population.² In order to calculate the sensitivity, specificity and predictive values for HIV testing it is useful to place the data in a binary or two-by-two table, as shown in Figure 2-2.

FIGURE 2-2

		BINARY TABLE	
		Infected	Non-Infected
TEST	Positive	True Positive (TP)	False Positive (FP)
	Negative	False Negative (FN)	True Negative (TN)

Sensitivity is the probability that the test will be reactive in an infected individual. A test with high sensitivity will detect a high percentage of infected individuals.

$$\text{SENSITIVITY} = \frac{\text{TRUE POSITIVES}}{\text{TRUE POSITIVES} + \text{FALSE NEGATIVES}} \times 100$$

Specificity is the probability that a test result will be non-reactive in an individual that is not infected.

$$\text{SPECIFICITY} = \frac{\text{TRUE NEGATIVES}}{\text{TRUE NEGATIVES} + \text{FALSE POSITIVES}} \times 100$$

Assay sensitivity and specificity are properties that are selected and manipulated depending on the purpose of testing. This is done by altering the selection of the cutoff point or the interpretation criteria of the test. The problem, however, is that there is almost always an overlap of infected and non-infected individuals when test results from each group are expressed as frequency distributions. When the referent value is selected so that all infected individuals (true positives) will be identified, the test will have a high sensitivity. However, a number of uninfected individuals will be incorrectly identified as infected (false positive) because specificity has been sacrificed for sensitivity. ELISA tests for HIV were first developed to screen donated blood for evidence of infection. The goal was to detect all infected units of blood with a very sensitive test. These tests have proven to be extremely sensitive in detecting evidence of infection, but this predicates some false positive test results.

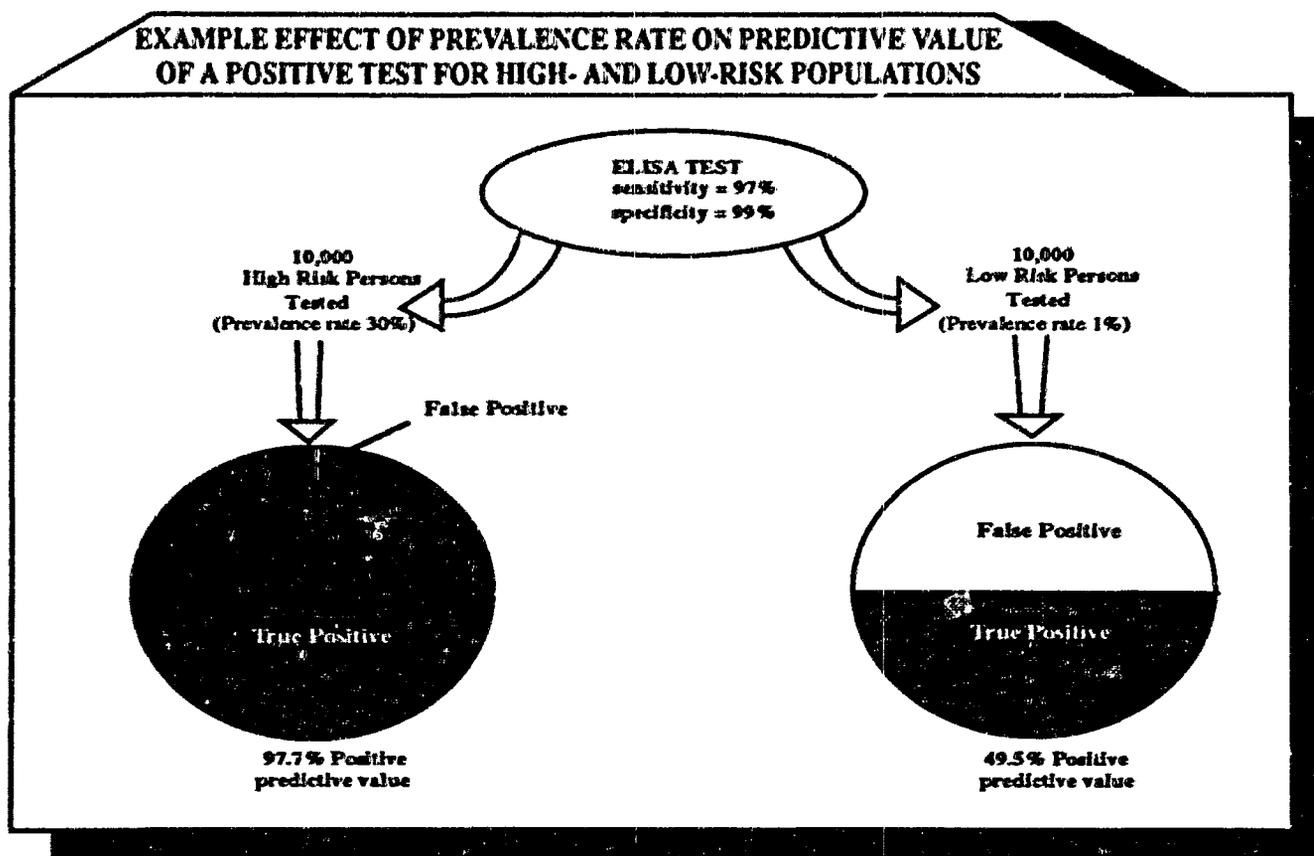
The predictive value is a probability statement indicating the likelihood of a test result correctly classifying an individual as infected or uninfected.² The predictive value is greatly influenced by the prevalence of infection in the population being tested.

$$\text{PREDICTIVE VALUE OF A POSITIVE TEST} = \frac{\text{TRUE POSITIVE}}{\text{TOTAL (true + false) POSITIVE}}$$

$$\text{PREDICTIVE VALUE OF A NEGATIVE TEST} = \frac{\text{TRUE NEGATIVE}}{\text{TOTAL (true + false) NEGATIVE}}$$

To illustrate the effect of prevalence rate on the predictive value of a test, consider the following example (Figure 2-3). A commercial ELISA test for HIV with a sensitivity of 97% and a specificity of 99% was used in one laboratory but on two different populations. When this test was used in a population of 10,000 persons seeking treatment for sexually transmitted diseases (HIV prevalence rate of 30%) the positive predictive value was 97.7% and the negative predictive value was 98.7%. When the same ELISA test was used in a population of 10,000 blood donors (prevalence rate 1%) there were many more false positive reactions and the positive predictive value or the probability that a reactive test result will indicate an infected person was now 49.5%. The negative predictive value or probability that a non-reactive test result indicates an uninfected individual was 99.9%.

FIGURE 2-3



It is clear that even a test with a high sensitivity and specificity can have a poor positive predictive value in a population of low prevalence. Hence most antibody testing strategies involve a testing algorithm or strategy which includes testing by a screening test and verifying the result by retesting with a second, supplemental assay. By screening a large number of sera and retesting the reactive samples we are redefining the test population. The group of sera being retested by the verification assay has a much higher prevalence rate and, therefore, the positive predictive value will be higher.

HIV Testing Considerations

Many technologies are used to signal the presence of HIV but are often very costly, technologically difficult to perform on a routine basis, or rely on specially designed containment laboratories for safety. Some of the direct detection methods include virus culture, electron microscopy, antigen detection, gene amplification, and nucleic acid probe techniques. These are important research tools and can be used for monitoring response to drugs, virus strain differentiation, pathogenicity, and vaccine trials. Serology is the most practical and common method used to detect HIV infection. Various serologic techniques are used to determine if an individual has developed antibodies in response to infection by the virus. Serologic tests commonly used to detect antibody to HIV are the enzyme linked immunosorbent assay (ELISA), other immunosorbent assays, agglutination assays, immunoblot (Western blot), radioimmuno-precipitation assay (RIPA), and immunofluorescent antibody (IFA) assays. (See the "Screening Tests for Antibodies to HIV" and "Supplemental Tests for Antibodies to HIV" sections in this chapter.)

If choosing a particular test method, it is important to consider the following:

- compatibility with other test systems in the country;
- sensitivity and specificity of the method;
- virus strains present in the country;
- versatility of test format;
- cost and availability;
- availability of maintenance and technical support;
- test format, single vs. batch;

Before adopting any new test method it should be evaluated under the conditions in which it will be used. This evaluation should include evaluating the test on a panel of sera with well characterized antibody status, a period of parallel testing with current test method, and a period of confirmation of all reactive test results as well as a representative sample of non-reactive test results.

All commercially available antibody tests report a very high sensitivity and specificity. It must be realized that these are determined under ideal conditions in known populations. It is important to determine the sensitivity and specificity of commercial tests in the setting in which they will be used. Factors such as storage, transportation conditions, viral antigenicity, water supply, as well as technical error can greatly affect the performance of these tests.

The conventional HIV testing strategy begins with screening by ELISA. Positive and indeterminate results are repeated by ELISA and then confirmed with a supplement test such as Western blot, immunofluorescence (IFA), or both. Conventional testing does have some cost and technological disadvantages:

Both the Western blot and IFA are relatively expensive and technologically demanding.

Many of the new ELISA and rapid tests which were designed as

screening tests are extremely sensitive and specific and may be considered as supplemental tests. In these alternative strategies, the first assay should be the most sensitive.

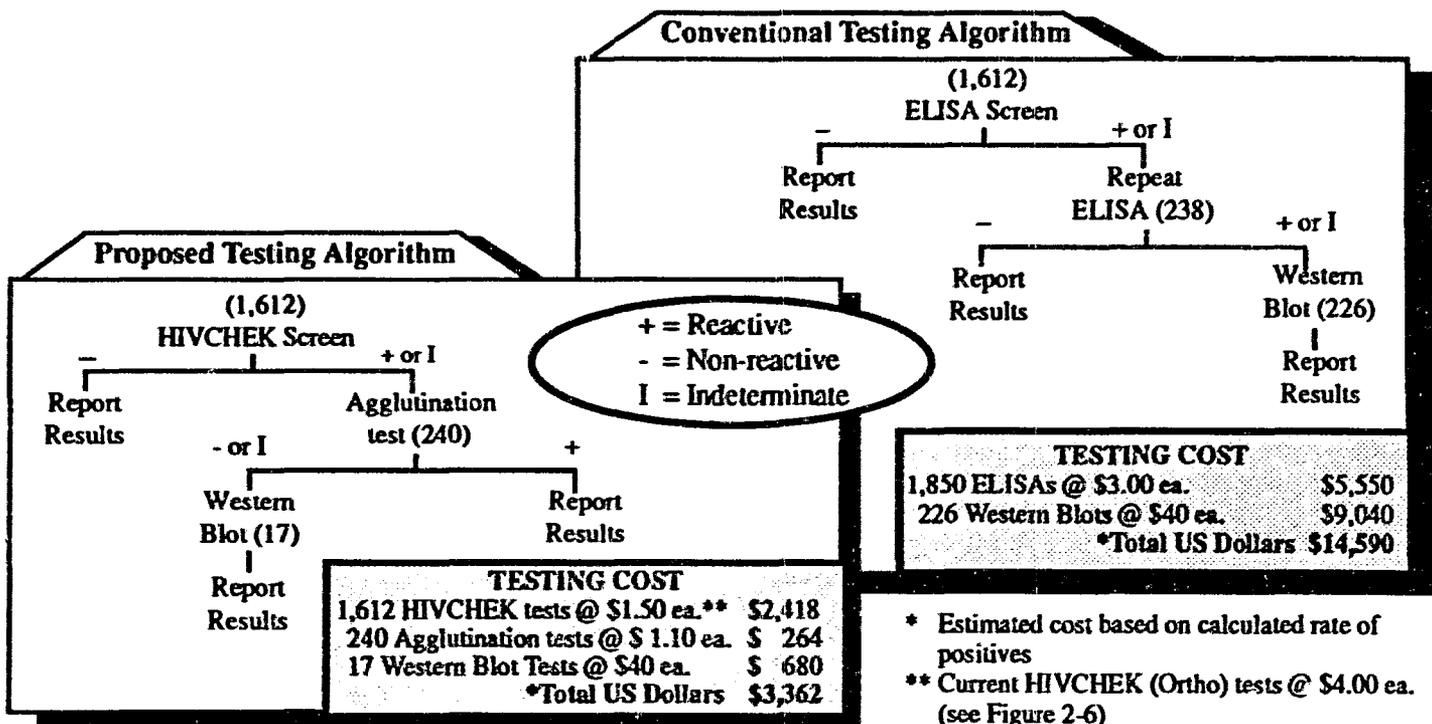
The WHO Global Programme on AIDS (GPA) is currently evaluating the use of alternative testing strategies.

There are additional combinations of tests other than ELISA – Western blot / IFA which could be used in a multi-layered testing strategy:

- the use of two ELISA tests (i.e., competitive and noncompetitive or a first and second generation test);
- combination of rapid test and ELISA;
- any of the screening tests supplemented by a line immunoassay;
- combination of two rapid or simple assays.

Based on the need for a less expensive and more practical testing strategy, an alternative strategy was proposed and evaluated by AIDSTECH and collaborators in Kenya, Ghana and Senegal (unpublished data). Figure 2-4 below compares the proposed testing algorithm with a conventional testing algorithm:

FIGURE 2-4



In the proposed strategy, blood was screened by the HIVCHEK (DuPont) assay with negative results being reported immediately. All positive or indeterminate sera (those with questionable results) would then be tested by an agglutination test. Specimens which were reactive on both the HIVCHEK and the agglutination test would be reported as reactive for antibody to HIV without further testing. Those results which were reactive by HIVCHEK but negative or questionable by agglutination test would be referred for Western blot testing.

The costs of using this proposed algorithm was compared with that of the conventional strategy and demonstrated a savings of over 75%. The proposed algorithm had a negative predictive value, that is, the probability that antibody to HIV is not present when the system resulted in a negative report, of 99.2%. The positive predictive value, or the probability that HIV infection is present when the test system yields a positive result, was 96.3%. The population tested represents blood donors, persons practicing high-risk behaviors, and persons with symptoms of AIDS; the overall prevalence rate was 7%.

SPECIMEN COLLECTION AND HANDLING

Quality laboratory results are dependent on, among other things, correct specimen selection, collection, and handling. Most tests for antibody can be performed on serum or plasma, but it is important to read and follow the test manufacturers' instructions concerning specimen selection, use of anticoagulants, or heat inactivation of serum.

It is important to collect blood in a clean container and test immediately or store it in such a manner as to avoid contamination. Serum or plasma should be separated from red cells immediately. Generally if specimens cannot be tested immediately, but will be tested within 3 days, they should be refrigerated at 4 degrees Centigrade. Otherwise freeze serum or plasma immediately (below -20 degrees C.) for the future testing. In this case it is important to plan for future testing and avoid repeated freezing and thawing of specimens. Some tests should only be performed on fresh unfrozen specimens; manufacturers' instructions should be followed. (Clear, non-hemolyzed and uncontaminated serum or plasma are required for HIV antibody testing.)

Recently, many of the commercial suppliers of ELISA and Western blot tests have adapted the protocols for use with whole blood specimens collected on filter paper.^{3,4} In this method, a small amount of blood is absorbed onto a specially designed and standardized piece of filter paper (Schleicher and Schuel #903, Keene, New Hampshire, USA) allowed to dry thoroughly, and transported to the laboratory. For testing, a prescribed size of circle is punched out of the blood spot and placed in an elution buffer. The antibodies are eluted from the filter paper disk and tested according to the adapted test protocol.

The major advantage of this technique is the facility with which one can obtain blood samples when it is difficult to obtain venous blood. Other advantages include:

Small amounts of blood can be used for both ELISA and Western blot testing.

Storage is facilitated.

Filter paper specimens can be easily and safely transported.

It is particularly suited for seroepidemiologic studies.

It is important to use the recommended, standardized filter papers and to dry the specimens thoroughly before storage or transportation. Specimens can be stored at room temperature for longer than 3 months without detectable loss of antibody and can be refrigerated or frozen as long as they are not exposed to elevated humidity. It is often recommended that the dried papers be stored in sealed containers with a desiccant. The manufacturer's recommendations for the adapted test protocol should be followed in order to be sure that final dilutions of specimen are correct.

As with any laboratory method careful quality control procedures should be included for the filter paper technique. This can be accomplished by preparing control filter disks with HIV positive and HIV negative blood and including these in each testing session.

SCREENING TESTS FOR ANTIBODIES TO HIV

The ELISA

As previously noted the ELISA (Enzyme Linked ImmunoSorbent Assay) technique is most commonly used for screening serum for antibodies to HIV and was designed to screen large numbers of sera efficiently in a batch testing mode.

ELISA Classifications

Commercial ELISA tests are classified as first or second generation based on the antigen preparation used in the test:

First generation ELISA tests for HIV use a lysate of whole HIV virus antigen which has been grown generally in a human or animal cell line, disrupted, inactivated, and applied to the solid phase of the assay. Nonspecific reaction with cellular proteins sometimes results in an increased number of false positive results.

Second generation ELISA tests for HIV use antigens which are synthetic peptides or recombinant proteins. These antigens are coated onto the solid phase. Synthetic and recombinant antigens are generally less expensive and safer to produce and should reduce the nonspecific cellular reactions; however, the antigens must be carefully chosen so as not to reduce the sensitivity of the test for detecting strain variations.

The original commercial assays prepared with HIV-1 specific antigens may detect from 30% to 92%^{5,6} of the individuals infected with HIV-2 due to cross-reactivity. The antigenic cross-reactivity is chiefly with the core proteins, and there is little or no cross-reactivity between HIV-1 and HIV-2 envelope proteins.⁷ Some of the new combination HIV-1/HIV-2 tests simply add a recombinant HIV-2 envelope protein to the HIV-1 antigens in the original HIV-1 specific tests. This type of combined assay is excellent for assuring a safe blood supply since it screens for both viruses. However supplemental tests for both viruses must be used for confirmation, thus complicating the interpretation and significantly increasing the costs of testing.

ELISA Formats

There are two basic test formats used in first and second generation ELISA tests:

The microtiter format, in which the solid phase support for the test antigen is the plastic well of 96 well microtiter plates. Sometimes the 96 well plates are divided into smaller test strips allowing more efficient testing for small batches. The microtiter strip or plate must be read on an ELISA reader which is adapted for use with microtiter equipment.

The bead test format, in which plastic beads are utilized as the solid antigen support. The test is performed in plastic trays, but reagents are transferred to test tubes for reading on an ELISA reader adapted for test tubes.

ELISA Principles

The ELISA technique is based on two principles: the noncompetitive and the competitive ELISA.

In the noncompetitive ELISA (sometimes referred to as the "indirect" or "double antibody ELISA") viral antigen is coated onto a solid support.⁸ The serum to be tested is diluted and then incubated with the antigen at a prescribed temperature. During this second incubation period, the antibody which is specific for HIV will bind to the HIV antigen; unbound antibody is then washed away and an anti-human antibody conjugated to an enzyme is added to the test well and incubated. During this incubation period, the conjugate binds to the human antibody which is bound to the HIV antigen to form a "sandwich." During the next washing step, all unbound conjugate is washed away. In order to visualize the reaction, a substrate is added, which is broken down by the enzyme to form a colored product. The colored product is measured on a spectrophotometer (ELISA reader) at a designated wavelength and reported in optical density (OD) units. In this noncompetitive ELISA method, the amount of specific antibody to HIV is directly proportional to the amount of color developed and to the OD reading. A cutoff point is determined by the manufacturer and all specimens with an OD reading above the cutoff are considered to be reactive for antibody to HIV.

In the competitive ELISA, enzyme labeled anti-HIV antibody competes with patient antibody for antigen, which has been immobilized on the plastic support.⁸ The amount of color developed is inversely proportional to the amount of specific HIV antibody present in the sample. The competitive assays generally require less time to complete and do not require specimen dilution.

An ELISA test that requires 2 to 4 hours to complete is economical when performed in batches. ELISA testing requires specific training and strict attention to detail throughout. Results from both noncompetitive and competitive techniques are objectively determined by a spectrophotometer. The equipment required for performing the test is expensive and requires maintenance for optimal performance. Figure 2-5 on the next page compares various commercially available ELISA tests.

FIGURE 2-5

ELISA TEST FOR HIV				
Test	Recombinant HIV-1/HIV-2	Enzygnost Anti HIV-1+HIV-2	Wellcozyme Recombinant	LAV-EIA
Application	Screening or Suppl. Large volume testing No time constraints			
Level of difficulty	Moderate	Moderate	Moderate	Moderate
Additional supplies or equipment required	Abbot reader, washer, incubator micropipettors	Microtiter reader, washer, water bath, micropipettors	Microtiter reader, washer, incubator, micropipettors	Microtiter reader, washer, incubator, micropipettors
Time to perform/plate	2.5 hrs.	2.1 hrs.	1.5 hrs.	3.5 hrs.
Classification	2nd generation	2nd generation	2nd generation	1st generation
Format	Bead	Microtiter	Microtiter	Microtiter
Principle	Noncompetitive	Noncompetitive	Competitive	Noncompetitive
Antigen	Recombinant proteins HIV-1/HIV-2	Synthetic peptides HIV-1/HIV-2	Recombinant proteins HIV-1	Purified inactive HIV-1
Manufacturer	Abbott	Behring	Wellcome Diagnostics	Genetic Systems
Tests per kit	100/1,000	192/960	96/480	96/480
Costs *	1.75	2.30	1.50	.90

* Cost = Relative cost per test based on purchase of 10,000 tests in US\$

This table is reflective of the different types of technology available and is not meant to be all inclusive nor to endorse specific tests.

EQUIPMENT COSTS FOR ELISA TESTING

Plate washer, including pump	\$700 (\$4,000 automated)
ELISA basic strip reader	3,000 (\$8,000 automated)
micropipettors	100
multipipettors	400
Disposal pipette tips / 1,000	40
Incubator	320
TOTAL ELISA COSTS	\$4,560 - 16,560

SIMPLE, RAPID, AND OTHER TESTS FOR HIV

Although the ELISA is most widely used, there are other screening techniques that are better adapted to laboratories without sophisticated equipment and to testing that is less frequent and on a smaller scale:

Simple, rapid immunobinding assays can use enzymes or other chemicals for detection of antibody-antigen complexes. An example is a dot immunobinding assay in which a synthetic antigen is supported on nitrocellulose. Specific antibody is bound to the antigen and then reacted with a colloidal gold conjugate. A red spot indicates a reactive test. This test can be completed in five minutes. Many of the new "rapid" tests for HIV are based on a similar principle. Other tests include built-in controls and some exhibit a + or - sign as an indicator of reactivity. The tests are economically performed as single tests and can be performed in much less time than ELISA. Test results are determined subjectively and rely on technical training and experience. Expensive equipment is not required. These tests, however, are not efficient for large volume testing.

Some serologic tests for HIV are based on the agglutination principle whether in a microtiter or slide format. This technique is based on specific antibody in the serum binding to particles which are coated with antigen. The bound particles form complexes which can be seen as aggregates on a slide or settle into defined patterns in a microtiter plate. The test patterns are read visually and are not dependent on equipment; however, the reading and interpretation are subjective. These tests can be performed economically alone or in batches. Figure 2-6 below compares other screening tests which are now available.

FIGURE 2-6

OTHER SCREENING TESTS FOR HIV					
Test	HIVCHEK	IMMUNOCOMB	RECOMBIGEN	SERODIA	TESTPAK HIV 1/HIV 2
Application	Emergency screening Single sample testing	Screening in small batches with no time constraints	Emergency screening Single sample or small batch testing	Small batch or large volume testing No time constraints	Emergency screening Single sample testing
Level of difficulty	Very simple	Simple	Very simple to perform Moderate interpret.	Simple	Very simple
Additional supplies or equipment required	None	Pipettes	Suggested high intensity light	Micropipettor	None
Time to perform test	5 minutes	30 minutes	5 minutes	2.5 hrs	10 minutes
Principle of test	Immunobinding	Immunobinding	Latex agglutination	Particle agglutination	Immunobinding
Format	Single test cartridge	Twelve test "comb"	Four tests per card	Microtiter	Single test cartridge
Antigen	Recombinant protein HIV-1/HIV-2	Synthetic peptides GP41, 120 HIV-1	Recombinant protein HIV-1	H9 infected cell Lysate HIV-1	Recombinant proteins HIV 1/HIV 2
Test sample	Fresh serum or plasma	Serum or plasma	Whole blood, serum, or plasma	Serum or plasma	Whole blood, serum or plasma
Manufacturer	Ortho	FBS Organics Ortho	Cambridge Bioscience	Fujirebio	Abbott
Tests per kit	100	36	100	210/550	40
Costs *	4.00	2.40	1.75	1.20	4.00

* Cost = relative cost per test based on purchase of 10,000 test in US\$

This table is reflective of the different types of technology available and is not meant to be all inclusive or to endorse the specific tests.

The Western blot

The immunoblot or Western blot test is most commonly used as a supplemental test for detecting antibody to the specific proteins of HIV. It is commercially available in kit form which simplifies the technique and provides standardized reagents.

The Western blot kit includes strips containing blotted protein bands which have been electrophoretically separated according to molecular weight. These strips are reacted with diluted serum and incubated to allow specific antigen-antibody binding. Nonspecific antibody is washed away and anti-human antibody conjugated to an enzyme is added and allowed to incubate. Unbound conjugate is washed away and substrate solution is added. Appearance of colored bands indicates reaction of antibody to specific proteins of the virus.⁹ Various band patterns are interpreted as reactive, indeterminate or non-reactive. Interpretation of reactive and non-reactive tests is based on data from clinical studies. Kits for immunoblotting are very expensive and the technique relies on subjective reading and interpretation of the test results.

The interpretive criteria for the Western blot assay vary and are debatable. The major genes and gene products are as follows:

Gene	Gene Products	
	HIV-1	HIV-2
Core (GAG)	p18, 24, 55	p16, 26, 55
Polymerase (POL)	p31, 51, 65	p34, 68
Envelope (ENV)	gp41, 120, 160	gp36, 105, 140

A recent CDC recommendation¹⁰ has proposed that a reactive test result for HIV-1 be defined by the presence of any two of the following bands: p24, gp41, and gp120/160. A negative Western blot result is one in which no bands are apparent. An indeterminate result is the presence of any other band or bands that fail to meet the positive criteria.

The criteria for interpretation of Western blot for HIV-2 was described in the report on the WHO meeting on the criteria for the evaluation and standardization of the diagnostic kits for the detection of HIV antibody.¹¹ Based on studies since that time, the WHO Collaborating Group on HIV-2 has recommended a revision of the WHO criteria for interpretation of HIV-2 Western blots. The revised criteria include the following definitions:

A positive result is one that shows evidence of 2 of 3 ENV bands with or without GAG and/or POL bands

A negative Western blot is one in which no bands appear

An indeterminate result is reflected by other profiles that are not considered positive or negative.

A second specimen should be requested for repeat testing of indeterminate results. These reactions may be due to early infections with HIV-2 or may represent cross-reactions with HIV-1, or they may be a nonspecific reaction.

Other Supplemental Tests

The line immunoassays, which are second generation assays, have potential use as supplemental tests. Recombinant proteins and synthetic peptides are applied in band patterns on plastic support strips and tested in a manner similar to the immunoblot assay. These tests will be less expensive alternatives for validation and for differentiation of viral strains because protein bands representing more than one virus can be applied to the strip.

Specific protein ELISAs are available for detecting antibody to specific proteins of the virus. In these assays, specific recombinant or synthetic peptides are coated onto individual wells of a microtiter plate and tested by a standard ELISA technique. Proteins from HIV-1 and HIV-2 can be used to determine strain specificity.¹²

The indirect Immunofluorescence assay (IFA) can be used as either a screening or supplemental test for antibody to HIV.^{13,14} In this procedure, virus-infected cells and non-infected cells are fixed on microscope slides. Serum is placed on the slides and allowed to incubate, during which time specific antibody binds to the antigen. Nonspecific antibody is washed away and a second antibody conjugated to fluorescein is added and allowed to incubate. The slides are examined under a fluorescent microscope for specific fluorescein bound to antigen. The uninfected cells are an important control for nonspecific reactions. IFA is a less expensive method for validating screening test results; however, an expensive fluorescent microscope is required and subjective interpretation of results relies on technical experience.

The radioimmunoprecipitation assay (RIPA)¹⁵ is a highly sensitive and specific supplemental assay, but it is limited to use in a few research laboratories because of cost, lack of commercial kits, and requirement for radioactive reagents. The procedure involves incorporating specific radioactive amino acids in the virus. The radioactive-labeled virus is then partially purified and mixed with serum being evaluated for presence of antibody. If antibody is present, it binds to the homologous viral-specific proteins against which it is directed. The antigen-antibody complexes are absorbed by staph protein A and pelleted by centrifugation. The precipitated labeled antigen is then separated by electrophoresis and its presence confirmed by autoradiography.

Figure 2-7 on the next page compares supplemental HIV tests.

FIGURE 2-7

SUPPLEMENTAL TESTS FOR HIV

Test	HIV Western blot	Inno-LIA HIV-1/HIV-2 Ab	Retro-tek IFA/HIV
Application	Supplemental testing	Supplemental testing	Screening or supplemental testing No time constraints
Level of difficulty	Moderate	Moderate	Moderate
Additional supplies or equipment required	Rotary shaker, micropipettes, aspirator	Agitator, aspirator, micropipettes	Incubator, micropipettes, fluorescent microscope
Time	24 hrs.	4 hrs.	2 hrs.
Test principle	Immunoblot	Immunobinding	Indirect immunofluorescence
Format	Nitrocellulose strip	Line immunoassay	Fixed cells on slides
Antigen	Partially purified HIV separated proteins	Recombinant proteins Synthetic peptides HIV-1/HIV-2	HIV-infected cells
Manufacturer	DuPont	Innogenetics	Cellular Products
Tests for kit	27 strips/kit	20 tests/kit	25 tests/kit
Costs *	40.00	20.00	8.00

* Cost = relative cost per test based on purchase of 10,000 tests in US\$

This table is reflective of the different types of technology available and is not meant to be all inclusive or to endorse the specific tests.

Equipment Costs for Supplemental Tests for HIV

Western blot
rocker platform ----- \$550

Immunofluorescence
fluorescent microscope -- \$12,000

Many other technologies which directly detect the virus are available. These include:

- HIV culture;**
- nucleic acid probe;**
- antigen detection;**
- electron microscopy;**
- polymerase chain reaction.**

These techniques directly detect the presence of the virus or its subunits in cells, tissues, or body fluids.

They are important tools for the research laboratory. They generally are not practical for the clinical lab or blood bank because they often:

- are not capable of detecting very small amounts of virus;**
- may be extremely expensive;**
- may require a significant amount of time to obtain results.**

One of the major problems in direct detection of HIV has been a low level of virus or antigen present in the cells. Recently, a novel technique has been developed for in-vitro amplification of the DNA or RNA of HIV, the polymerase chain reaction (PCR).^{16,17}

The principle of the PCR is based on a three-step cycling process:

- denaturation of double stranded DNA;**
- annealing of primers;**
- primer extensions.**

A typical cycle takes from 3 to 5 minutes and is repeated 20 to 40 times to increase the level of the DNA to a level detectable by common laboratory methods. The targeted DNA region is defined by the primer pairs. Primers are chosen which define a well conserved region of the HIV genome. This region is then amplified to detectable levels.

The PCR technique will be useful in:

- diagnosing HIV infection in infants born to seropositive mothers;**
- defining latency periods;**
- monitoring antiviral therapy;**
- differentiating between HIV-1 and HIV-2.**

The PCR technique is a developing technology and should be used cautiously. The use of proper controls in all test runs is extremely important. Contaminating DNA is a recurring problem. Even the smallest amount of contamination will be amplified and give false results. It is advisable to:

- carry out all procedures in a separate room;**
- assure that all equipment is disposable;**
- make sure that reagents are dispensed into single use aliquots.**

QUALITY ASSURANCE IN HIV TESTING

A National Quality Assurance Program is important to ensure continuous delivery of accurate test results. In addition it serves as an important evaluation tool following a training program and initiation of new techniques.

“Quality assurance” describes the total process whereby the quality of laboratory reports can be guaranteed. It is all encompassing and includes steps taken both inside and outside of the laboratory to achieve reliable results. Included are the following:

- proper selection and identification of specimens;**
- specimen collection;**
- data recording and analysis;**
- training and continuing education;**
- well maintained and calibrated instruments;**
- laboratory quality control;**
- evaluation of new tests;**
- external proficiency testing.**

In establishing a National Quality Assurance Program, standards should be formulated for technicians and laboratories and they should be monitored for compliance through a laboratory inspection program and periodic performance evaluation of technical staff. Problems identified through the monitoring process should be corrected and re-evaluated.

“Quality control” describes the laboratory procedures which ensure that tests are performed correctly. This includes:

- running known positive and negative control sera with each test;**
- assuring that all manufacturer specifications for an acceptable test run are met;**
- recording storage temperature of reagents;**
- recording lot numbers and expiration date of reagents;**
- recording maintenance of equipment;**
- assuring that all instruments are calibrated, including pipetting devices.**

Positive and negative control sera are generally included in test kits, but often additional control sera are desired for monitoring reagents over time, identifying trends due to technical factors, testing proficiency, or monitoring other conditions that may affect test results in the laboratory. Ideally serum from a single donor is used as a control reagent; however, it is virtually impossible for most laboratories to obtain a single specimen of sufficient volume and disease documentation for quality control purposes.

Kudlac et al.¹⁸ have described a strategy for creating a standardized serum pool and for comparing tests on the basis of a net positive OD (optical density) value. In this method, serum samples which tested negative on ELISA and Western blot were pooled and filtered, and a preservative was added. This was used as a negative pool and also was used to dilute a positive pool to the optimum

antibody level. To create the positive antibody pool, 100 samples were selected which were antibody positive by ELISA and reacted to all of the HIV-1 protein bands by Western blot. After pooling the positive sample and filtering, the pool was diluted to a level at which:

the ELISA OD level was on the descending straight line of the titration curve, and

all protein bands were visible on Western blot.

This concentration of positive control was chosen because the OD of a sample in the descending straight line of the titration curve varies in direct proportion to the amount of antibody in the sample. Samples at this concentration represent antibody concentrations that react optimally with the antigen on the ELISA plate. Any factors affecting this optimal reaction result in a quantitative and proportional change in the OD. This change can be used to:

measure precision in the laboratory;

monitor reagent quality.

To evaluate test variability, the reactivities of the control samples are expressed as the net positive OD value. This value is calculated by subtracting the cutoff OD from the sample OD.

Establishment of a national proficiency testing program will assure standardized test results. Panels of well characterized sera are distributed to laboratories as unknowns. The laboratories perform routine tests for HIV and report results to the National Reference Laboratory. Results from all laboratories participating in the program are analyzed and proficiency reports are returned to the laboratory. Problems with reagents, storage conditions, and technique can be identified through this program but, more importantly, it provides assurance of quality testing.

International proficiency testing programs are available through the World Health Organization and the U.S. Centers for Disease Control (CDC). Participation of the National Reference Laboratory in these programs should be encouraged as validation of quality national testing. For more information on the WHO Proficiency Testing Program contact the Global Programme on AIDS, WHO, Geneva. For information on the CDC program, contact: PRI, P.O. Box 12795, Research Triangle Park, North Carolina, 27709, U.S.A.

LABORATORY SAFETY

Surveillance and anecdotal reports indicate that the risk of work-related HIV infection for all health care workers is low. However, there are documented cases of laboratory-acquired HIV infection.¹⁹ HIV has been isolated from blood, other body fluids, and tissues of infected individuals. The laboratory staff should be aware that the skin and mucous membranes of the eye, nose, and mouth are considered as potential pathways for entry of the virus.²⁰ Needles, sharp instruments, broken glass, and other sharp objects must be carefully handled and discarded in a safe manner (see Figure 2-8 at the end of this chapter). The increasing prevalence of HIV increases the risk that laboratory workers will be exposed to blood from patients infected with HIV; therefore, blood and body fluids from all patients should be considered as potentially infected with HIV or other blood-borne pathogens. Laboratory workers should adhere to universal infection control precautions for minimizing the risk of exposure and should be familiar with sterilization and disinfection methods.

HIV is extremely sensitive to heat and to chemical disinfectants. It is easily inactivated by standard methods for sterilization and disinfection.²¹ Heating methods are generally more reliable than chemical methods (see Figure 2-9 at the end of this chapter). Chemical methods of disinfection should be monitored carefully. They are influenced by:

- temperature;**
- presence of organic material such as blood;**
- dilution and stability of solution.**

Wash instruments carefully prior to sterilization or disinfection to remove blood and other proteinaceous material that may affect disinfection.

Chemical solutions should not be used for disinfecting syringes and needles for vaccination because they may inactivate vaccines or otherwise chemically react with the injectable.

Normally, simple wiping of environmental surfaces with an appropriate disinfectant is acceptable.

Infectious spills should be flooded with disinfectant before a final wiping.

COUNSELING

Counseling in conjunction with HIV testing is a powerful prevention tool. The primary public health purposes of post-test counseling are to educate infected individuals to avoid infecting others and to help uninfected individuals initiate and sustain behavioral changes that reduce their risk of becoming infected. In addition the anxiety and fear of the patient can be reduced and the significance of test results explained through counseling.

Laboratory and blood bank personnel are sometimes required to provide pre- and post-test counseling. This is often an uncomfortable task for professionals who have not been trained in counseling techniques. Training in counseling techniques should be provided to all professionals who report test results to patients and should be included as well in technician training programs. One must not forget the technician in a rural hospital who may be forced to explain why donated blood is not suitable for transfusion.

TRAINING

Training is a critical component of an effective HIV testing program. The effectiveness and reliability of the HIV tests is dependent on trained technicians performing the tests correctly. New and continuously changing technologies rely on a continuing education program. Competency-based training as described elsewhere in this book is particularly suitable for training in laboratory techniques.

It is important to incorporate training in HIV testing techniques into the curriculum of schools for laboratory technicians and is equally important to design a training program for technicians that have already been certified and have laboratory experience. This training can take place at a training center in the reference lab or can be bench training on site. Training needs and performance evaluation should be monitored on a continuous basis with training programs adjusted as needed.

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SUGGESTED READING

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GENERAL GUIDELINES FOR LABORATORY SAFETY

- 1. Use appropriate barrier precautions to prevent skin and mucous membrane exposure to blood or body fluids. Include gloves, lab coats, masks, and protective eyewear when procedures are likely to generate droplets.**

- 2. Wash hands and other skin surfaces immediately after exposure and upon removing gloves.**

- 3. Prevent injuries by sharp objects. Use plastic when available. Discard needles and other sharp objects in puncture-proof containers. Do not attempt to recap or bend needles.**

- 4. Avoid mouth pipetting in the laboratory.**

- 5. Decontaminate laboratory work surfaces.**

STERILIZATION AND DISINFECTION METHODS FOR HIV

Sterilization kills all forms of life including viruses, bacteria, and spores. Sterilization methods include:

Steam

Using an autoclave or modified pressure cooker, operate at 121 degrees C. at 1 atmosphere of pressure for a minimum of 20 minutes.

Dry heat

Using an electric oven, heat at 170 degrees C. for 2 hours.

High-level disinfection kills viruses and bacteria but not spores. High-level disinfection methods include:

Boiling

Boil for 20 minutes.

Soaking in chemicals

Chemical inactivation is dependent on the presence of blood and other proteinaceous material which inactivates the chemicals, and on fresh preparation of appropriate concentrations of chemicals.

Immersion for 30 minutes in **one** of the following is recommended:

- Sodium hypochlorite, 0.1% -0.5% available chlorine
- ethanol, 70%
- isopropyl alcohol, 70%
- formaldehyde, 4%
- glutaraldehyde, 2%
- hydrogen peroxide, 6%
- polyvidone iodine, 2.5%

**SURVEILLANCE FOR
HIV, AIDS, AND STDs**



SURVEILLANCE FOR HIV, AIDS, AND STDs

INTRODUCTION

Surveillance is the routine collection and analysis of data which may be used to take appropriate action.

WHO recommends that HIV surveillance efforts focus on:

- the distribution of HIV infections
- the trends of HIV infections

USES OF HIV AND OTHER SURVEILLANCE DATA

HIV data are the best source of information on the actual AIDS situation and trends. Such data assist in:

- targeting specific interventions
- securing political or governmental support
- enhancing the commitment of staff workers

AIDS surveillance data may be used to show:

- presence of the problem locally
- a clinical case load due to HIV infection

STD data are important for:

- determining the magnitude and trends of risk behaviors
- evaluating whether the program is effective in decreasing risk behaviors

HIV SURVEILLANCE

When surveillance is the major objective of an HIV testing program, the following questions must be addressed:

- Who should be tested?
- How will they be recruited?
- How will specimens be obtained?
- Do counseling services have to be available?

SENTINEL SURVEILLANCE

Sentinel surveillance can determine differences between groups and locations over time.

Sentinel surveillance using "left over" blood can offer a practical way to monitor trends over time.

METHODS OF BLOOD SPECIMEN COLLECTION FOR HIV ANTIBODY TESTING

Before screening or testing it is critical to:

- decide on the method for obtaining blood samples
- write a description for operating procedures
- ensure confidentiality

Unlinked anonymous (with no way of contacting the tested individual) is the most accurate testing method for surveillance purposes.

PRECISION AND SAMPLE SIZE

Great precision in the assessment of HIV prevalence is not usually needed for public health purposes, and large sample sizes are not necessary.

A sampling frequency should be used to:

- identify trends
- determine that a threshold has been exceeded

DATA MANAGEMENT AND ANALYSIS

Manual data management may be used initially, with computer systems being developed later.

For unlinked anonymous surveillance, basic demographic and geographic information should be collected.

AIDS CASE DEFINITION AND SURVEILLANCE

A single national definition should be accepted for purposes of reporting to WHO; however, data on the number of individuals who had positive serologic tests, negative serologic tests, and no tests are also helpful.

SURVEILLANCE FOR STDs

The evidence suggests that patients with STDs are at greater risk for HIV infection and transmission.

Control of STDs is one of the major strategies for preventing HIV transmission.

The first step in STD surveillance is to determine what facilities are used locally by patients.

For estimating STD incidence, the most important data are the number of initial visits to facilities.

CONCLUSIONS

The backbone of HIV/AIDS prevention efforts is surveillance for:

- HIV infection
- STD infection
- knowledge of HIV risk factors
- practice of risk behaviors

Sentinel surveillance allows trends to be monitored according to convenient systems, and offers opportunities for:

- seeing the diversity of HIV
- recognizing that other indicators exist
- providing a structure for monitoring trends



SURVEILLANCE FOR HIV, AIDS, AND STDs

**Gary Siutkin
James Chin**

INTRODUCTION

Rationale for Surveillance and Basic Considerations

The worldwide spread of AIDS has created an urgent need to mobilize resources and target efforts to prevent the further transmission of HIV. Surveillance provides the essential guide for this work by:

- determining the extent of the problem;
- monitoring trends in different areas and population groups.

Methods used for surveillance of HIV infection and AIDS do not differ technically from those used for other infectious diseases. However, HIV/AIDS surveillance is more difficult because of the:

- severity of HIV infection;
- extreme social and personal implications of identifying an HIV-infected person.

Because of these factors, surveillance issues such as anonymity and confidentiality are of paramount importance.

A surveillance system should be practical and readily understood by those who implement it. Two vital questions need to be answered in designing an HIV/AIDS surveillance system:

- What are the most relevant priorities for HIV/AIDS prevention and control?
- How will the data obtained be used?

Priority Surveillance Information for HIV/AIDS Prevention and Control

Surveillance is the routine collection and analysis of data which may be used to take appropriate action. In the context of HIV/AIDS prevention and control, data on HIV, AIDS, STDs, and risk behaviors would be appropriate to collect for surveillance.

At present, the World Health Organization recommends that HIV surveillance efforts focus largely on determining:

- the distribution of HIV infections;**
- the trends of HIV infections in sentinel target populations.**

This recommendation provides the major emphasis for this chapter. HIV surveillance is accomplished through the use of serologic tests and is distinctly different from case reporting systems.

It is clear that:

- the true AIDS case load is always underestimated by most reporting systems, in some cases by as much as tenfold or more;**
- the true HIV prevalence can be used to make estimates of the current and future clinical burden of diseases due to HIV infection, including AIDS.**

Other high-priority surveillance data include prevalence and incidence of STDs in sentinel populations. Such data provide information on:

- the population at risk;**
- the changes in risk behaviors.**

Similarly, sentinel systems can be developed to:

- monitor knowledge;**
- monitor reported behaviors;**
- determine other indices of program function or effectiveness.**

This chapter outlines these key principles of STD surveillance. It is important to remember that in order to monitor the effectiveness of an AIDS program, we must keep track of data on:

- trends in awareness and knowledge;**
- risk behaviors;**
- STDs;**
- HIV infections in sentinel populations.**

Before proceeding, readers may wish to refer to the glossary at the end of this chapter, which offers definitions on certain key terms.

THE USES OF HIV AND OTHER SURVEILLANCE DATA FOR IMPROVED HIV/AIDS PREVENTION AND CONTROL

In Africa in 1989, there were many populations of STD patients and prostitutes in which the prevalence of HIV ranged from 20% to 80%. In many urban areas the prevalence of HIV infection

reached 10% to 25% in adults. Such data are essential to target prevention efforts and increase the commitment of decision-makers to AIDS prevention and control programs.

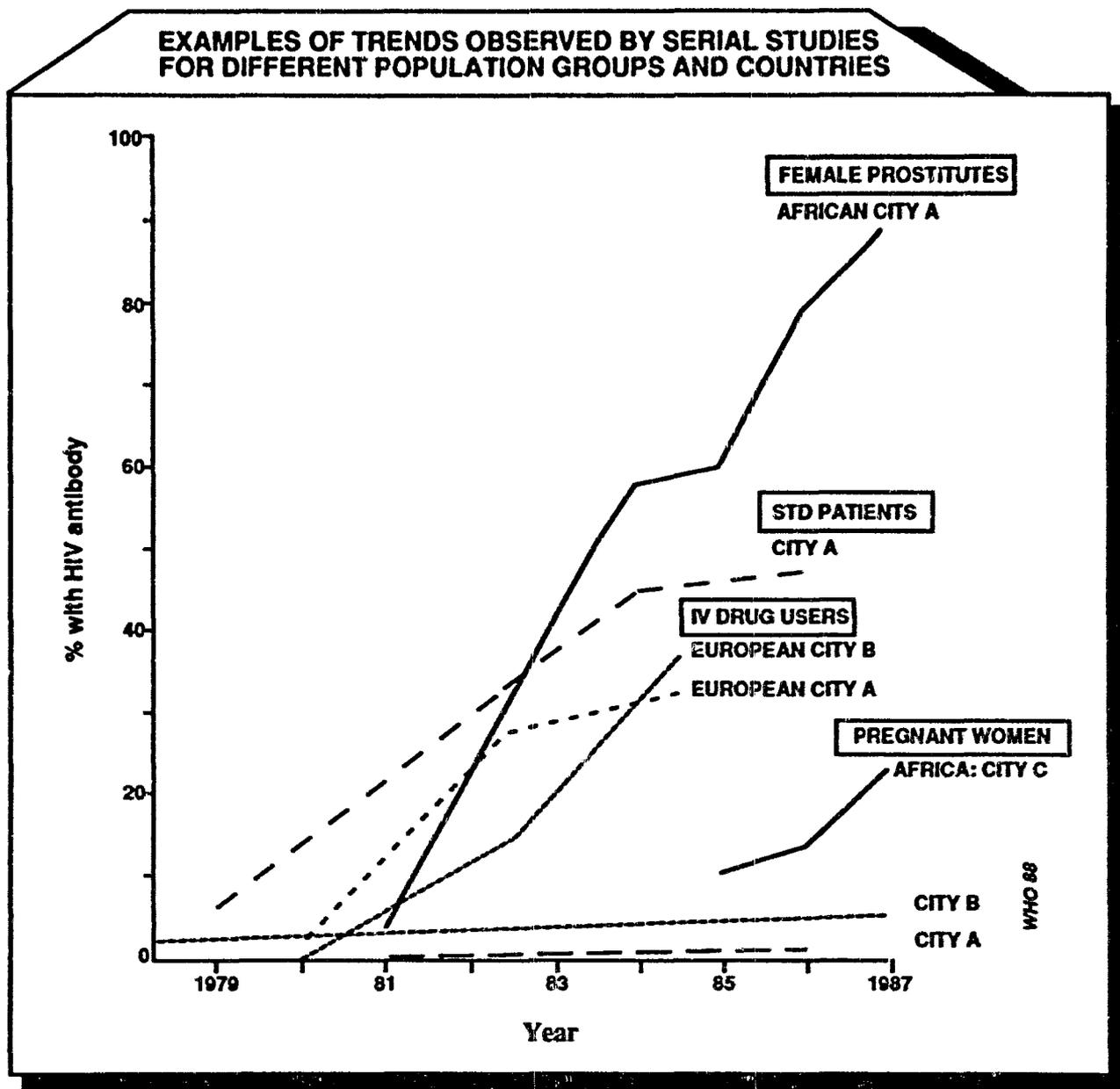
Surveillance is also critical to:

determine how rapidly HIV is spreading to new areas and other groups of people;

discover and follow trends.

Figure 3-1 shows examples of trends seen in African countries in different populations:

FIGURE 3-1



Studies estimate that the HIV prevalence has increased by about 1% per year among groups thought to represent the general population (such as antenatal clinic attenders) in some countries. In at least one location, an increase of 4% to 5% per year has been documented in antenatal clinic attenders. A 40% increase of HIV prevalence was documented in one year in one prostitute population that was not receiving adequate educational services.

HIV data are among the most valuable and useful health data currently available. Two examples confirm this point:

In one country, the finding that HIV prevalence was 6% in an antenatal clinic in a rural area resulted in accelerated educational campaigns at the village level.

In another country, the first signs of an increase in prevalence to 3%-4% in STD patients resulted in accelerated efforts to recruit and train new staff in counseling for STD patients, and to ensure availability of condoms to those persons.

HIV data can also be used to obtain and ensure the commitment of individuals and groups for AIDS prevention and control programs. Many persons still are not aware of how serious the situation with AIDS is, or how rapidly changes occur. HIV data furnish the best information on the actual situation and trends. These data can be used to:

help secure or increase support from politicians and governmental agencies;

target interventions;

enhance the work commitment of individual staff members at all levels.

In addition, dissemination of the data facilitates educational efforts aimed at providing individuals with a better understanding of their real risk. A more complete description of the uses of HIV data for guiding AIDS programs is available from WHO/GPA.²

AIDS Data

AIDS case surveillance data are used to demonstrate that:

the problem is present locally;

the clinical case load of disease due to HIV infection is increasing.

Other than these two uses, data on the number of AIDS cases are usually less useful than HIV data because of the long incubation period and substantial under-reporting.

STD Data

STD data are important for:

determining the magnitude and trends of risk behaviors;

evaluating whether the program is effective at decreasing risk behaviors.

Surveillance systems can also be developed to monitor disease awareness, attitudes, knowledge, and behavior.

(See Chapter 13 on evaluation.)

HIV Testing Objectives: Surveillance vs. Other Objectives for HIV Testing

The major objective of any HIV testing program is to:

document the HIV incidence or prevalence in populations (surveillance);

OR:

identify infected individuals (case finding).

Before designing a testing program, it is important to recognize which of the two objectives is to be met. Once the objective is made clear (i.e., surveillance vs. case finding), the following questions must be addressed:

Who should be tested?

How will they be recruited?

How will specimens be obtained?

Do counseling or other services have to be available?

Many persons believe that HIV screening or testing should accomplish both surveillance and case-finding oriented objectives. However, attempts to attain both objectives can severely compromise the reliability of the surveillance data collected.

Collection of personal identifying information is not necessary for most surveillance purposes. In fact, insisting on collecting such data can result in persons at risk of HIV infection refusing to participate, and/or avoiding the facility in the future.

Therefore, it may not be possible to meet both case-finding and surveillance objectives with a single testing system. Parallel HIV testing programs need to be developed if both objectives are to be met. For example:

An antenatal clinic sets up a surveillance system based upon unlinked testing. Unlinked tests for HIV serologic markers take place only after removing (unlinking) personal identification information from the blood specimen.

A separate but parallel program offering voluntary confidential testing can be subsequently developed if infections are detected and resources are available to offer such services as counseling, etc. In a voluntary confidential test, results are conveyed to tested individuals and to a few selected health care providers.

Specific Objectives of HIV Surveillance

Specific objectives of HIV surveillance include:

estimating the incidence and/or prevalence and distribution of HIV infection in population groups;

monitoring trends in HIV infection over time;

- identifying subgroups at enhanced or reduced risk of infection for purposes of intervention;
- evaluating and setting priorities for intervention programs;
- assessing risk factors in HIV transmission;
- making projections of future AIDS cases;
- providing information for program planning and justification of requested resources.

The objectives considered most relevant and urgent for any program may differ according to the program's policies, current state of development, and current needs. Examples include current need for advocacy, enhanced commitment of staff, overall direction, regional priorities for counseling, and need for training.

In all cases it is important for the program to plan and evaluate activities based upon monitoring and using information on the following:

- level and trends of HIV infection in population groups;
- trends of HIV infection in different locations.

Discussion on objectives is recommended and use of data should occur:

- before initiating surveillance;
- during training;
- after analysis when determining distribution.

Advantages of Sentinel Serosurveillance

Sentinel serosurveillance involves the selection of specific sites at which a predetermined number of persons from a specified population group(s) are routinely tested in a regular and consistent way according to a predetermined protocol.

The main purposes of sentinel surveillance are to:

- determine the differences between groups and locations;
- determine changes over time.

For these purposes, populations need not be perfectly "representative."

Sentinel surveillance systems in Africa have been designed largely on the basis of the use of "leftover blood" and therefore take advantage of the convenience of existing populations which are seen at set sites (such as antenatal clinics or STD clinics); and the convenience of serum samples already available. Other advantages include:

- fewer logistical problems in patient recruitment than in other systems;
- no informed consent (if personal identifying information is removed—unlinked—from the blood specimen before testing);

surveillance data collected by unlinked testing are more accurate than data from other methods.

Such a sentinel system would be a very practical way to monitor trends over time.

Alternative methods of HIV surveillance include general population surveys and cohort studies, but these methods have several serious disadvantages:

They are much more costly than sentinel surveillance.

They are logistically difficult to evaluate.

They require large sample sizes.

If large surveys are to be capable of measuring trends over time, then the bias in each survey should be constant. This may be unlikely. For example, there may be a larger number of "refusers" in a repeat study, causing the trend to appear to be less of an increase than is real.

Other Sources of HIV Data: Cohort Studies

Cohort studies may provide data for surveillance purposes but should not be relied upon as the basis of a surveillance system because of:

probable bias in constituting the cohort;

problems of follow-up.

Nevertheless, very useful data can be derived from cohort studies in selected populations, such as the military, workplace groups, or recruited antenatal women. These data can:

provide direct information on incidence related to specific interventions;

complement a basic sentinel surveillance system;

provide information on program or project effectiveness.

Other Sources of HIV Data: Cross-Sectional Studies

Ad hoc or other less systematically derived serologic studies can also provide data on the distribution of HIV infections. Ad hoc studies are useful to collect information on groups or in locations where:

little or no HIV information exists;

there has been no data for years;

there are important unanswered questions about certain groups.

Here it would be best to repeat prior study methods whenever possible, although in some circumstances it may be useful to improve the methods. Sentinel surveillance for HIV can then be used to encompass this new information, and the new studies can be performed in the context of expansion.

Selection of Populations and Sites for Sentinel Surveillance

A number of sentinel groups are potentially available for HIV antibody screening, and they can be divided into two general categories:

groups that are not at a high risk of HIV infection and are more representative of the healthy sexually active population (e.g., antenatal clinic attenders);

groups that are more likely to be exposed to HIV due to high-risk behavior (e.g., STD patients and prostitutes).

Most African countries have decided to perform sentinel surveillance activities on both categories. Other groups have been chosen as sentinel populations from each of these categories, depending in part on convenience of access.

Examples of other populations chosen among possibly high-risk groups include the military, truck drivers, and other highly mobile groups.

Examples of other populations chosen that might represent the general population include factory workers or hospital admissions for unrelated diagnoses (e.g., trauma patients).

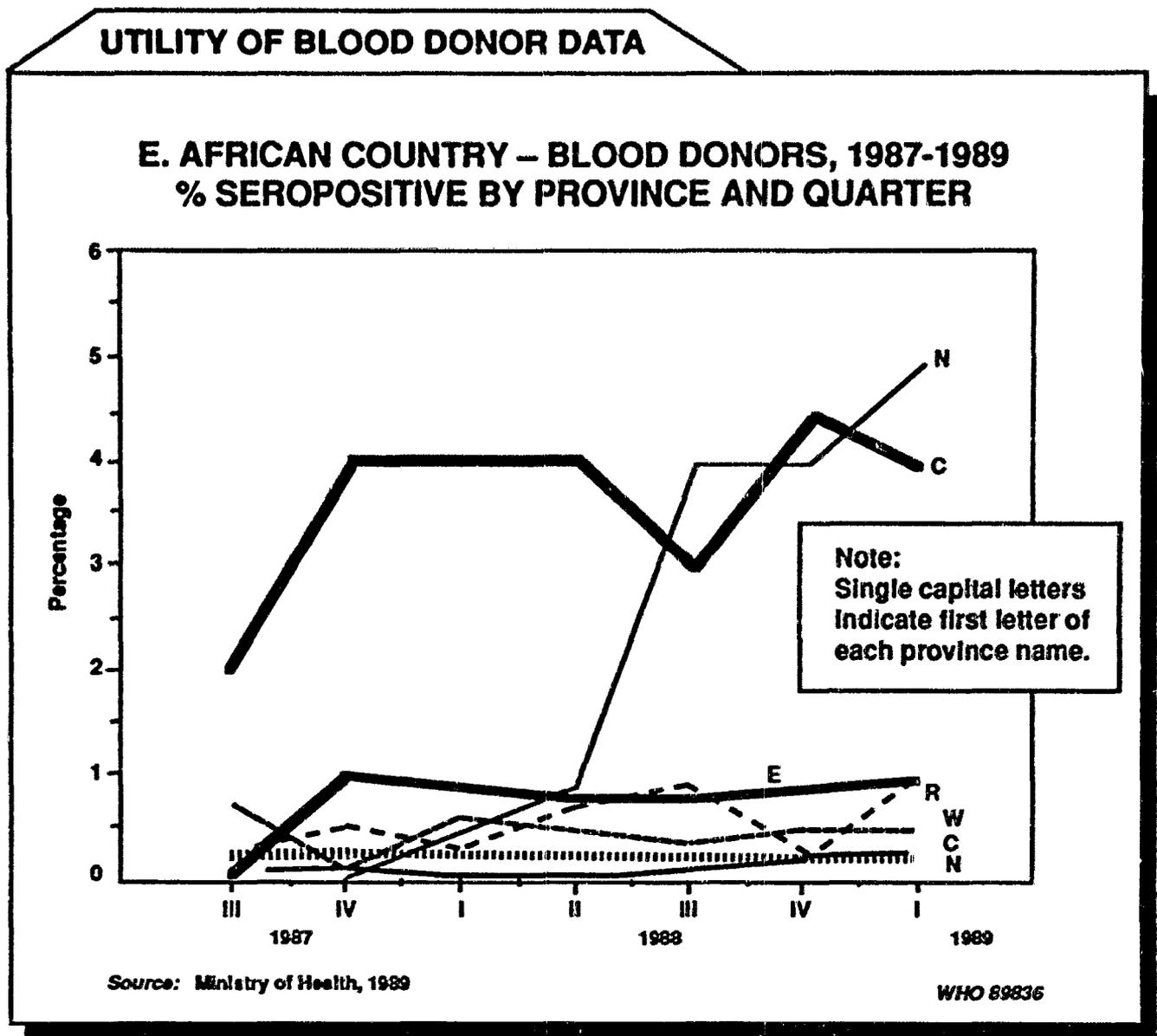
THE USE OF BLOOD DONORS AS A SENTINEL POPULATION

Special mention must be made of the use of data from individuals who have donated blood. Such data should already be available, and, therefore, require only collection and tabulation for analysis. These data are a ready source of information on HIV prevalence, often from areas with few prior or current studies.

An example of the utility of blood donor data is shown in Figure 3-2 on the next page. These data were collected in early 1989 for discussion at the national AIDS program review in one East African country. The data, which had not been previously examined, demonstrated the differences in HIV prevalence among blood donors in seven provinces and the changes that had occurred over the preceding two years. Based on these findings, the AIDS program review made several recommendations, including the implementation of much more directed activities in the provinces with the higher rates, and the implementation of a more systematic and regular tracking of these data by program staff.

Another country recently reviewed its blood donor data and was surprised to learn that five provinces had an HIV prevalence of more than 2%, with one province showing more than 7%. It was previously thought that the problem was confined to high-risk populations, as prior studies had only been performed on prostitutes.

FIGURE 3-2



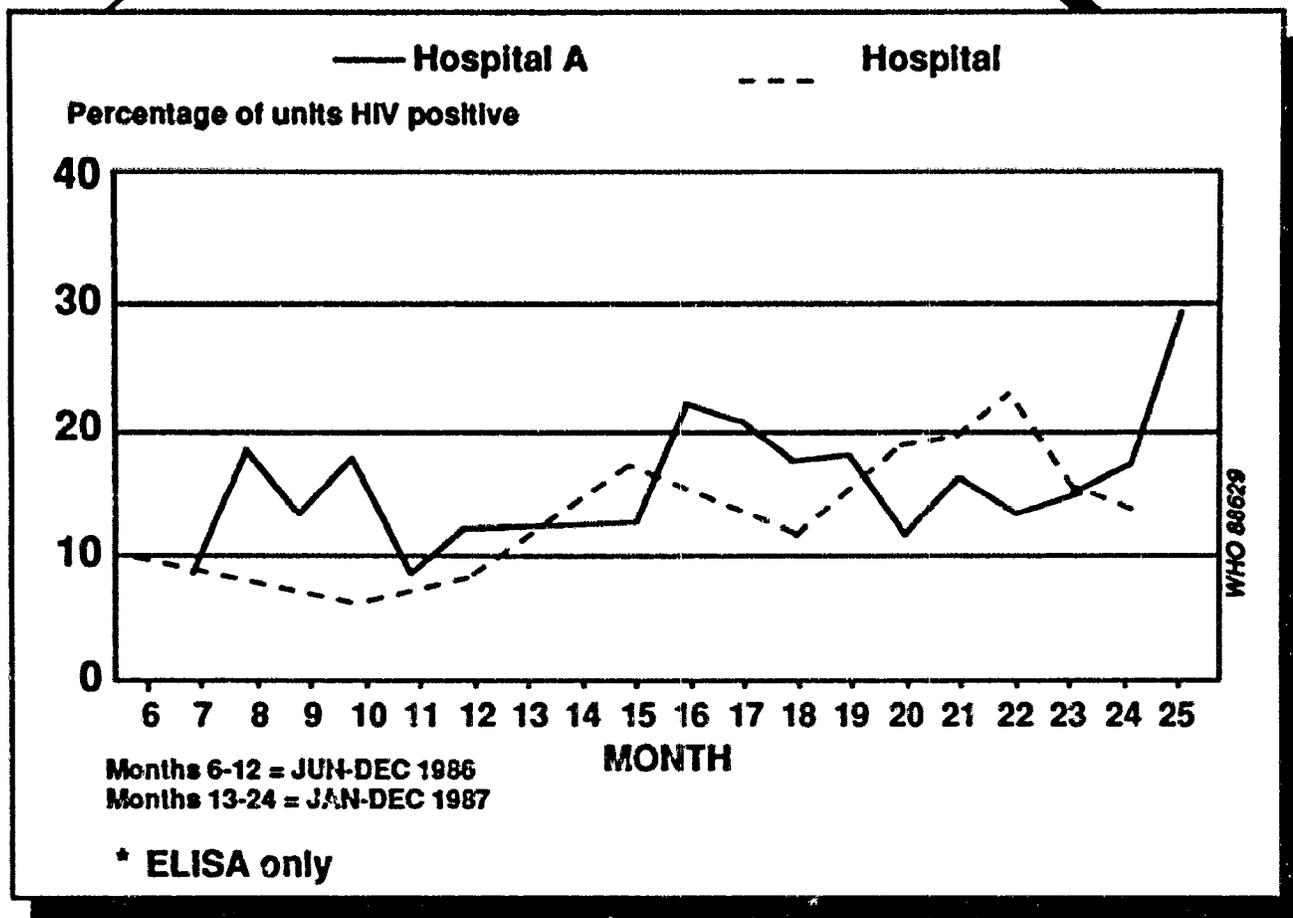
Although blood donor data may be useful to alert program staff to rates that may be higher than suspected, they present severe problems of reliability:

First, blood donor data may be highly variable from month to month. As seen in Figure 3-3 on the next page, the percentage of HIV positive blood units at Hospital A varied from 12% to 29% over a span of less than 12 months. This was due in part to shifts in recruitment populations. In some places, seasonal changes may be seen in the data as military posts or schools might receive preferential visits during different times of the year.

Second, the prevalence of HIV among blood donors may stabilize or actually decrease over time as collection sites selectively discourage recruitment of high-risk persons for donation. This is shown for the U.S. in Figure 3-4 (overleaf) and has been seen in Rwanda, France, and Mexico as well.

FIGURE 3-3

**PERCENTAGE OF BLOOD TRANSFUSION UNITS
SEROPOSITIVE FOR HIV, 1986-1987***



Blood donor data may give the impression of a decrease in HIV among the general population, but a simultaneous look at antenatal clinic attendees may show a real increase. An example from Tanzania is given in Figure 3-5 (next page).

These considerations indicate that blood donor data should be actively collected, analyzed, and used in order to:

- provide some information for locations where no other data exists;
- provide feedback to the blood recruitment services on effectiveness practices to discourage high-risk donors.

Blood donor data should not be used to:

- represent the general population;
- monitor trends.

For those purposes, we suggest the groups mentioned above and the groups sampled at selected sentinel sites as described on the following pages.

FIGURE 3-4

**HIV ANTIBODY PREVALENCE IN BLOOD DONORS
(N=9,671,411), UNITED STATES, APRIL 1985 - JULY 1987**

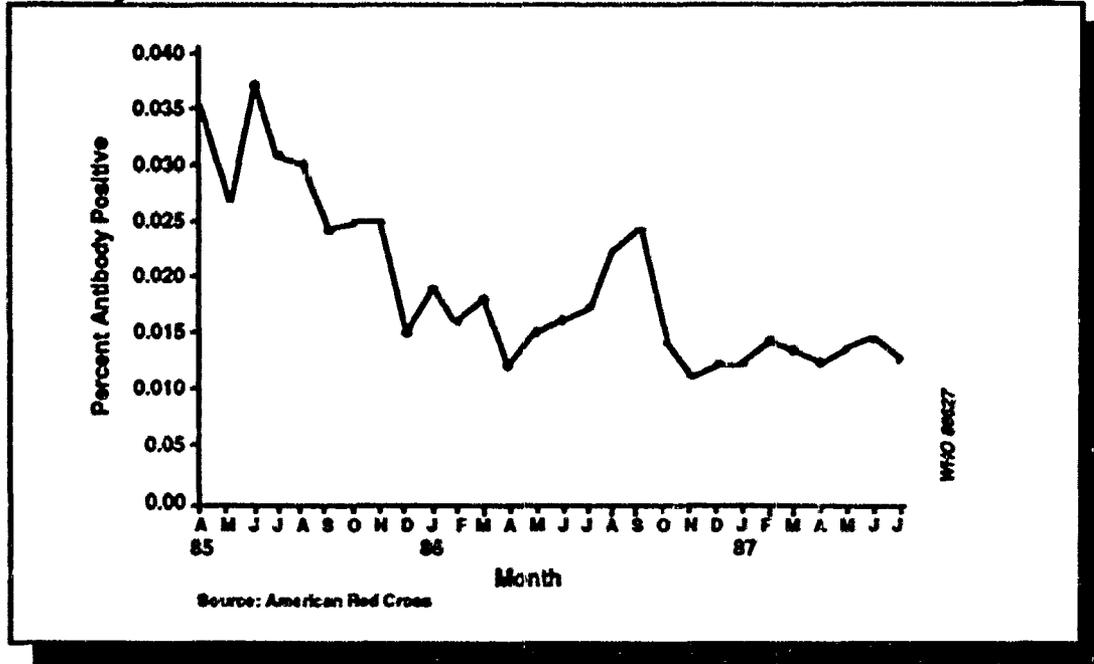
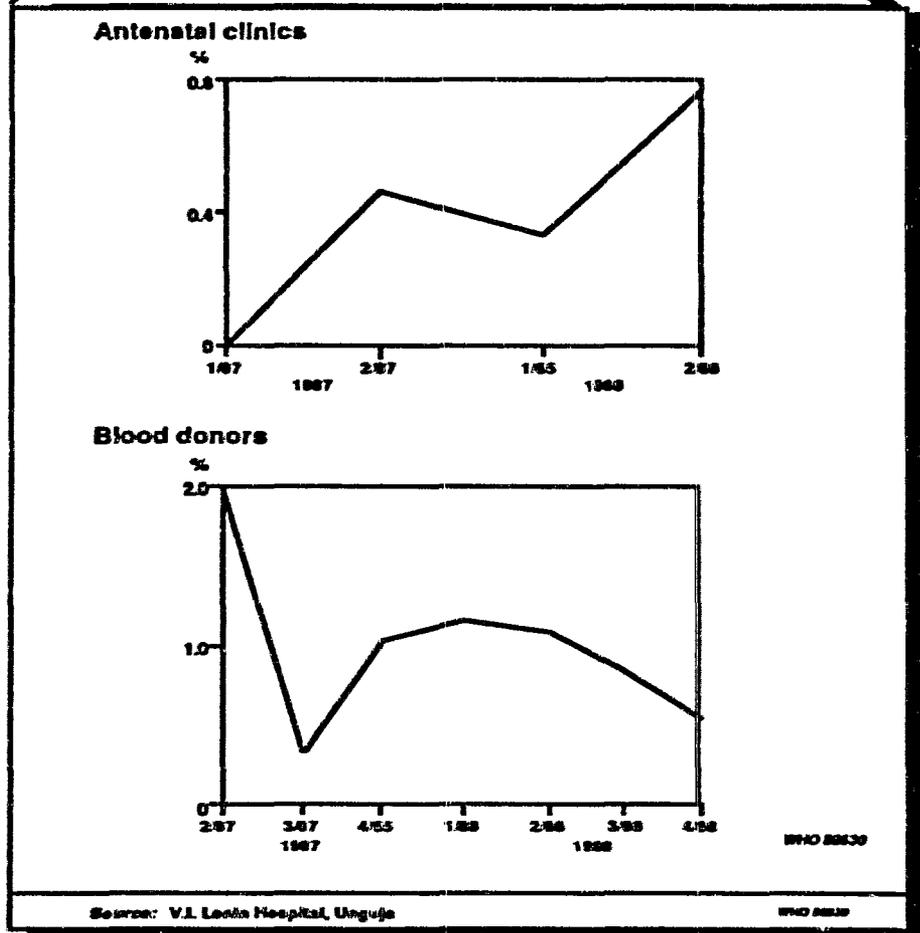


FIGURE 3-5

**HIV SENTINEL SURVEILLANCE : ANTENATAL CLINIC
ATTENDEES VS. BLOOD DONORS, TANZANIA, 1987-1988**



Selection of Sentinel Sites for Monitoring Trends in Selected Populations

Sentinel sites selected for serosurveillance:

must have a sufficient number of attendees so that adequate sample sizes can be obtained;

should be located where blood is routinely drawn and comprehensive services are provided to the population groups selected.

Example sites include STD clinics where serum is routinely collected for VDRL and antenatal clinics where serum is taken for hemoglobin and, perhaps, VDRL.

Wherever possible, sites should:

be selected in different geographic areas;

serve populations of varied demographic characteristics.

include representation from both urban and rural areas, as well as other areas of special interest, such as migrant populations.

A group of one to three core sites can be selected initially and then gradually expanded to more sites depending on available resources and infrastructure. Occasional ad hoc studies may help define other sites for possible expansion.

Methods of Obtaining Blood Specimen Collection for HIV Antibody Testing

Before HIV antibody screening or testing is started for surveillance purposes, it is critical to:

decide on the method to be used for obtaining blood specimens;

write a protocol which describes the procedures for operating at specific sites;

place special attention on ensuring confidentiality.

WHO has identified five methods of collecting specimens, and three of these methods may provide useful surveillance information to public health programs: unlinked anonymous, voluntary confidential, and voluntary anonymous. Each is briefly described below:

unlinked anonymous – As previously stated, this method can provide reliable estimates of HIV prevalence with minimal participation bias. Blood drawn for other purposes is tested for HIV antibody after identifying data are removed to ensure that there is no way of linking the test results back to individuals. If this method is adopted persons cannot be given their test results and cannot be counseled. This method can provide reliable data when the objective of surveillance is primarily to get epidemiologic information such as prevalence levels and trends.

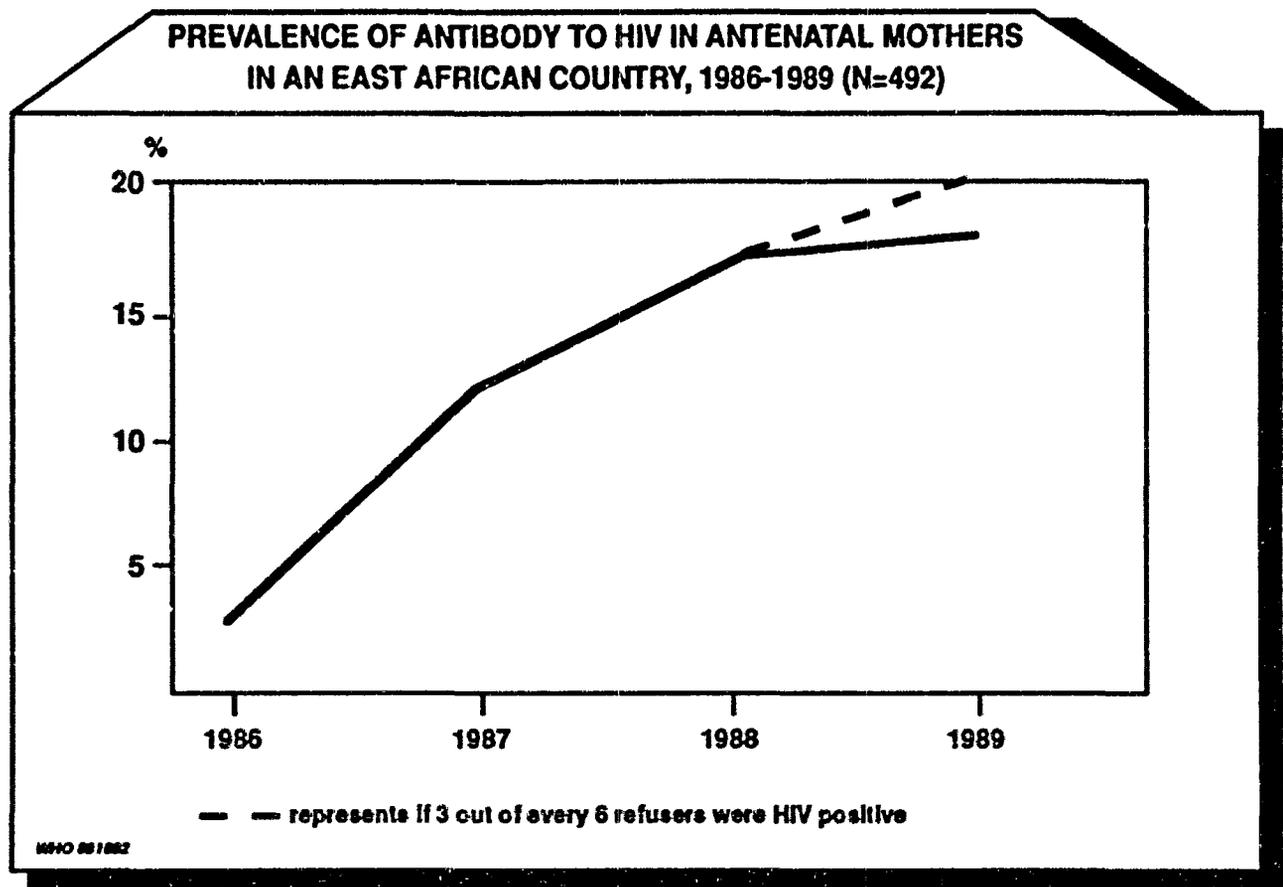
voluntary confidential – This method provides HIV testing on request and the results are conveyed to the individual. However, identity of the person and test results are restricted to a few selected health care providers. Counseling should be provided to the persons being tested.

voluntary anonymous – In this method, an individual gives a blood specimen but provides no accompanying identifying information. The

sample is labeled with a code number known to the donor so that test results can be obtained if desired. Counseling should be provided.

For our purposes, the unlinked anonymous method can provide reliable surveillance data. The principal advantage of this method is the reduction of participation bias because all of a pre-selected number of blood specimens can be tested for HIV. This is of critical importance because participation bias could result in an observed trend which appears to be flattening or “stabilizing” when the true prevalence is increasing. The reliability of unlinked anonymous testing can be best illustrated by Figure 3-6, which shows the prevalence of antibody to HIV in antenatal mothers from 1986 to 1989 in one East African country:

FIGURE 3-6



Although unlinked testing provides the most accurate data for surveillance purposes, concurrent or parallel voluntary testing may be desirable in some circumstances. The operational procedures for collection and handling of samples and test results must be carefully developed to maintain confidentiality in the system.

The major advantage of unlinked anonymous testing is that it maintains anonymity and minimizes participation bias. With voluntary methods participation bias is a major problem, since only those who volunteer are screened. Maintaining confidentiality becomes critical. Any breaches in confidentiality may result in individuals withdrawing from the health facilities that conduct testing.⁵

Laboratory Tests for HIV Surveillance

Surveillance for HIV infections relies heavily on the use of standardized and reliable laboratory procedures and serologic tests. Laboratories supporting the sentinel sites should be staffed by well-trained personnel and have access to adequate supplies of the necessary reagents and capacity to store reagents.

HIV antibodies can be detected by several techniques, including enzyme-linked immunosorbent assays (ELISA or EIA), particle agglutination (PA) tests, and supplementary tests such as immunofluorescent assays (IFA), and immunoblot (IB) or Western Blot (WB). Conventional screening tests such as ELISA and PA can be used as supplemental tests in a multi-layered testing strategy (see Chapter 2, HIV Testing).

If the primary objective of surveillance is to gather epidemiologic information and anonymous unlinked testing is used, and testing is taking place in areas with a moderate to high prevalence of HIV infection, it may not be necessary to routinely confirm positive results with a supplementary test. In these situations, a wider degree of error can be accepted.

However, in voluntary surveys in which individuals need to be counseled, it is essential that positive results be supplemented by additional tests.

The predictive value of a positive test (i.e., the probability that a positive test represents a true positive rather than a false positive result) depends on the sensitivity and specificity of the test as well as the prevalence of HIV in the population. The predictive value of a positive test is low in low-prevalence areas and high in high-prevalence areas (see Chapter 2, HIV Testing).

It is not essential to confirm single positive specimens for surveillance obtained purely for epidemiologic purposes, but it would still be advised under low-prevalence situations because a higher degree of accuracy is needed when there are few infections. Therefore, in low-prevalence areas, specimens that are positive on ELISA tests should be retested, and specimens that are repeatedly reactive should be confirmed by additional supplemental tests.

In areas where HIV-2 is prevalent, if both HIV-1 and HIV-2 are positive on initial screening, a confirmatory test for HIV-1 only is sufficient for surveillance purposes. (If only one of the two (HIV-1 or HIV-2) is positive, then Western Blot testing should be carried out.)

In some HIV serosurveys, especially where the target population is composed of infants or young children, blood specimens have been collected on filter paper. With this method, blood specimens are collected directly onto filter paper strips or spots. The dried blood spots do not require refrigeration if specimens are processed within a few weeks and can be mailed to the laboratory for testing. Use of this method requires special attention to proper specimen collection. An initial evaluation of the reliability of the test should be done by laboratories before using it for serosurveys. Some test systems have not yet been standardized for filter paper specimens.

PRECISION AND SAMPLE SIZE CONSIDERATIONS

Great precision in the assessment of HIV prevalence is not usually needed for public health purposes. It may be sufficient to determine, for example, if prevalence is under 1%, between 1% and 5%, or in the range of 20% to 40%. Large sample sizes are not necessary.

A sampling frequency should be based on estimated incidence (or changes in prevalence) when it is used to:

- identify trends;
- determine that a threshold has been reached or exceeded.

Action should be planned for what takes place when a specific threshold prevalence level is reached.

Less frequent sampling might be needed for groups whose rates of increase are low, such as among antenatal clinic attendees. Sampling every three to six months in such populations should suffice for most purposes. For a given level of confidence, this method has the additional advantage of requiring smaller sample sizes to assure that the prevalence level is not above a specified threshold level.

In countries where baseline prevalence estimates are low (< 0.5%), the use of lot quality assurance sampling methods may be considered. This has the advantage of requiring smaller sample sizes to assure that the prevalence level is not above a specified threshold for a given level of confidence. However, this is not an appropriate method for obtaining baseline prevalence estimates needed for monitoring trends.

DATA MANAGEMENT AND ANALYSIS

One of the decisions that must be made when planning a surveillance system is whether data management should be handled by manual or computerized systems. Countries with limited trained manpower resources may begin surveillance activities with a manual data-management system using hand tallies and other simple techniques. Computerized data-management systems can be developed later, according to the needs of the program. As far as possible, standardized instruments should be developed so that data at different sites are compatible.

For unlinked anonymous surveys, it is preferable to collect a minimum of basic demographic and geographic information (e.g., age, parity at antenatal site, sex, diagnosis at STD site).

For linked confidential surveys, information on selected behavioral risk factors can also be collected.

The utility of collecting additional information through any HIV surveillance system should be carefully weighed. Programs should seek a balance, knowing that:

- there are problems associated with managing a larger data base;
- there are also advantages to using additional information for program planning and evaluation.

A review of the categories of personnel, staff, and other persons in need of briefing and training and the basic content of that training are outlined in Figure 3-8 on the next page.

SURVEILLANCE FOR AIDS CASES

Surveillance to identify AIDS cases is desirable in every country, since cases have continued to increase rapidly during the past decade. The major purpose of AIDS surveillance is to collect clinical and epidemiologic data systematically.

A prerequisite for an AIDS surveillance system is a practical and reliable case definition. This is especially important in developing countries where adequate laboratory facilities are often lacking. The definition must be simple and reflect clinical consistency.

FORMATTING

In order to effectively use data for decisions and action, it is critical that data are:

formatted in a concise manner for easy understanding;

presented and distributed in the most educational and effective way.

Figure 3-7 reviews the steps needed in the development of a sentinel surveillance system.

FIGURE 3-7

TWELVE ESSENTIAL STEPS IN THE DEVELOPMENT OF HIV SENTINEL SEROSURVEILLANCE PROGRAMS

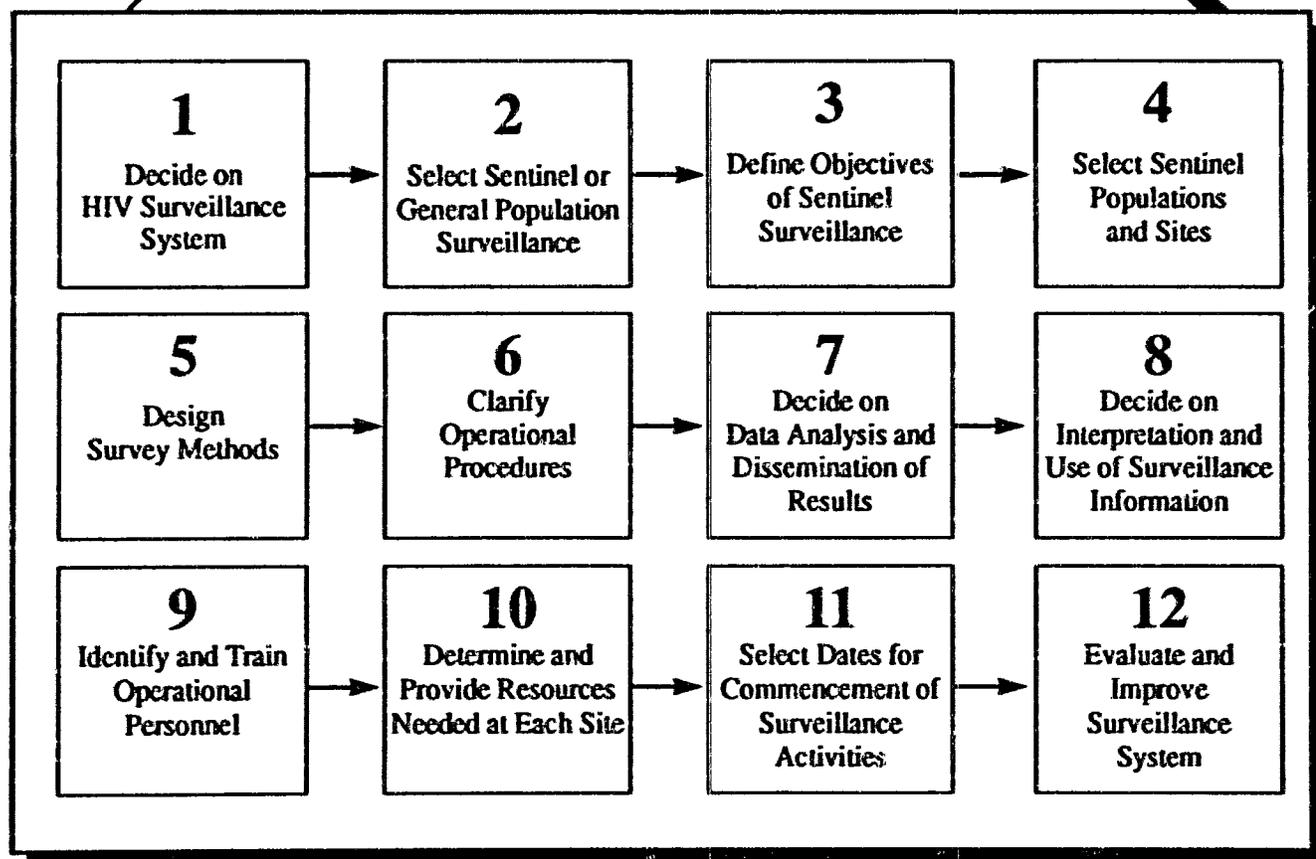


FIGURE 3-8

**TRAINING REQUIRED
BY PERSONNEL CATEGORY AND
FREQUENCY FOR SENTINEL SURVEILLANCE**

Personnel Category	Type of Sessions and Topics Covered	Frequency
Policy makers (politicians, top administrators)	Briefings – 1,2,3	Every 6 months or annually
Senior clinicians, epidemiologists & statisticians	Briefings – 1,2,3 Workshops – 3,4,5	Every 6 months
Other senior health personnel	Training – 1,2,3 Planning w/shops – 4,5	Every 6 months
Provincial health personnel	Briefings – 1,2,3 Planning w/shops – 5	Every 3-6 months
On-site health personnel (e.g. antenatal, STD)	Briefings – 1,4,5 Training/feedback – 2,3,6	Quarterly feedback with training once a year
Laboratory personnel	Training – 3,6,7	
Data management personnel (statisticians, computer programmers, data coordinator, data entry clerks, data analysts, etc.)	Training – 3,6,8	

Key to Topics Covered:

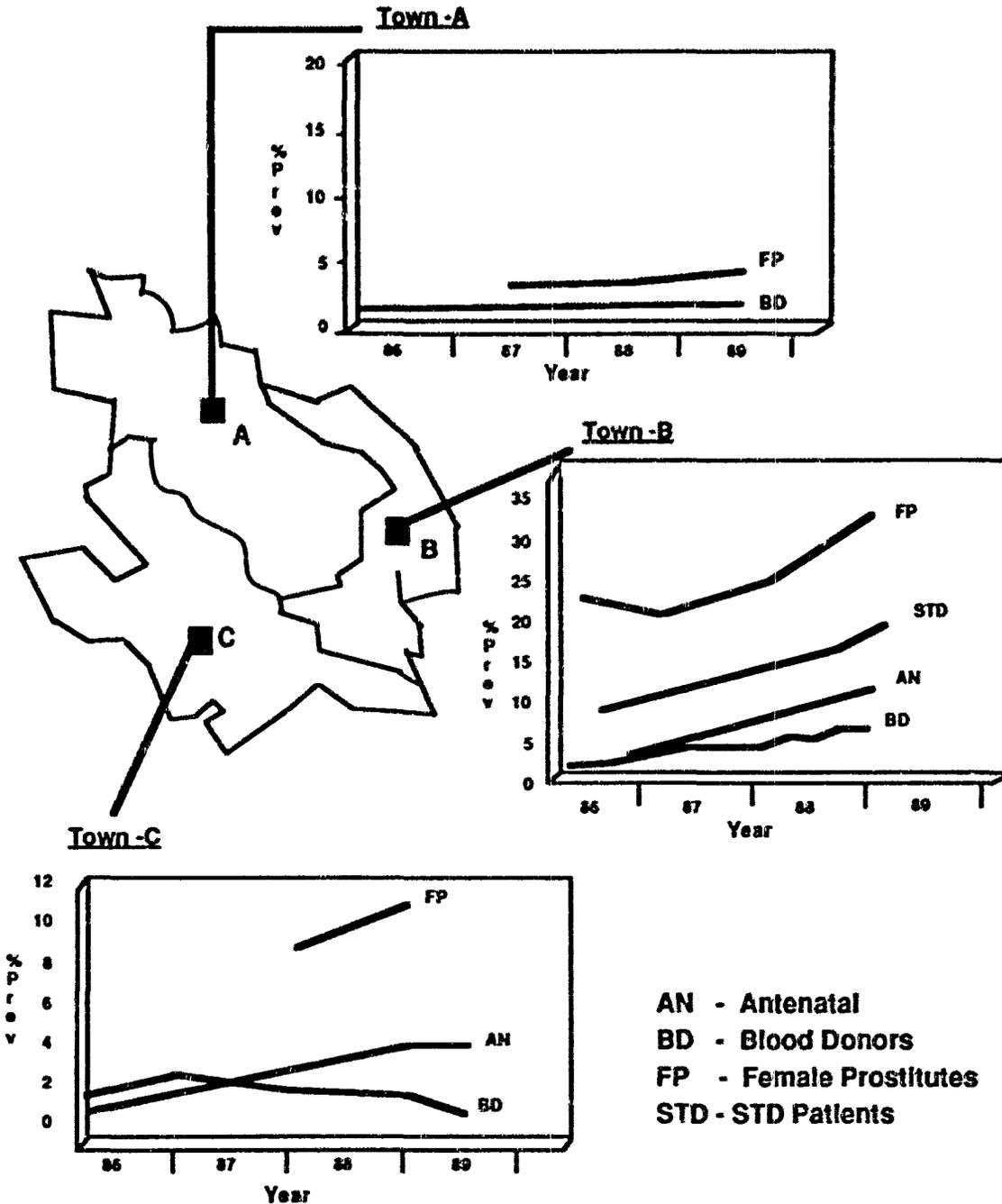
1 - Discussion of existing data on HIV/AIDS	5 - Prevalence/incidence studies, sampling issues, bias
2 - How to use surveillance data for control/prevention of HIV/AIDS	6 - Conduct of surveys/operational procedures
3 - Design of survey methods, e.g. selection of populations and sites, unlinked vs linked testing, confidentiality issues, sampling issues, etc; developing and modifying protocols	7 - EIA procedures, filter paper testing methods, Western Blot procedures, quality assurance
4 - Protocols for sentinel surveillance	8 - Computerized data management systems, use of computer to collect and analyze data for sentinel surveillance

An example of formatting is shown on the next page in Figure 3-9, which presents national and local information on the variability between locations, groups, and trends. Simplified approaches such as this should stimulate discussion and result in enhanced, targeted action by individuals and groups.

CURRENT AIDS CASE DEFINITIONS

Two definitions are currently in use in African countries. The WHO clinical definition, also known as the Bangui definition (1985), was developed in recognition of the limited applicability of the CDC/WHO definition in Africa. The CDC/WHG definition was revised in 1987 to include

**AN EXAMPLE OF TRENDS IN HIV SEROSURVEILLANCE
DATA FOR 3 CITIES IN AN AFRICAN COUNTRY**



additional indicator diseases, permit presumptive diagnosis of some diseases, and give more importance to HIV antibody testing. Recently some African countries have added laboratory confirmation of HIV infection to the existing Bangui case criteria for reporting AIDS. It is difficult to establish a purely clinical definition of AIDS because of several related factors:

- Signs and symptoms of AIDS indicator diseases are not specific.
- Other causes need to be ruled out to make a diagnosis of AIDS.

Extensive under-reporting, under-recognition, and delays exist in reporting AIDS cases to official authorities.

The use of serologic tests for diagnostic purposes cannot be made a priority in developing countries because in some areas the facilities may be inadequate to do these tests.

It is recommended that before deciding on a particular definition for surveillance, field verification studies be undertaken, including some confirmation by serologic tests.

Aside from the issues of case definition, other problems that need attention are:

accuracy of diagnosis, which depends on health personnel skills;

reporting delays due to logistic problems of data collection and information flow;

concern about patient identity, which may be a cause for non-reporting.

PRACTICAL RECOMMENDATIONS FOR AIDS SURVEILLANCE

A practical approach for a national AIDS program could begin with clinicians meeting to review clinical and microbiologic information about local cases. These clinicians could recommend an AIDS case definition, and propose a national definition.

Subsequent reviews could recommend that:

the national definition include a serologic test, but that reporting be made for cases that meet the definition even if a test was not performed or the test was equivocal or negative;

reporting forms be developed, with instructions and training for completion;

evaluation be performed for the national definition;

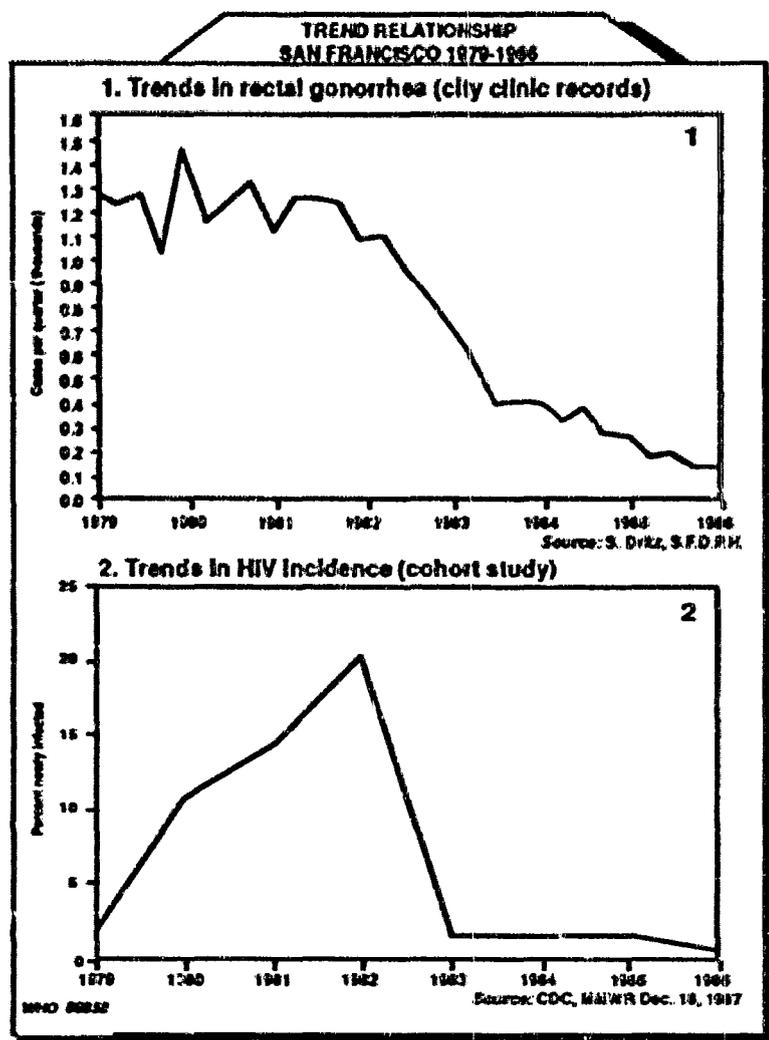
the national definition be accepted for purposes of reporting to WHO; however, recognize that it would be helpful to include numbers of people who had positive serologic tests and numbers of people who had no test, or negative test results.

STD SURVEILLANCE AND HIV/AIDS CONTROL

Evidence now suggests that patients with sexually transmitted diseases (STDs), in particular those which cause genital ulceration, are at greater risk for HIV infection and transmission. Control of STDs is therefore one of the major strategies to prevent HIV transmission. Efforts to strengthen STD control activities are complementary to AIDS control. In addition, the same behaviors which increase risk for STDs also increase the risk of contracting HIV. Therefore, monitoring trends in STDs can be expected to provide important feedback to AIDS programs about whether high-risk behaviors are changing. Changes in STD prevalence are a key indicator of the effectiveness of AIDS/HIV program activities. Therefore it is recommended that STD and AIDS control programs cooperate in the development, evaluation, and use of simple and manageable assessment methods.

Figure 3-10 shows the relationship between reported STD cases and incidence of HIV in a high-risk population in San Francisco. When the number of gonorrhea cases was high, the incidence of HIV steadily rose. When behaviors began to change (most dramatically between 1982 and 1983) both gonorrhea and HIV incidence declined.

FIGURE 3-10

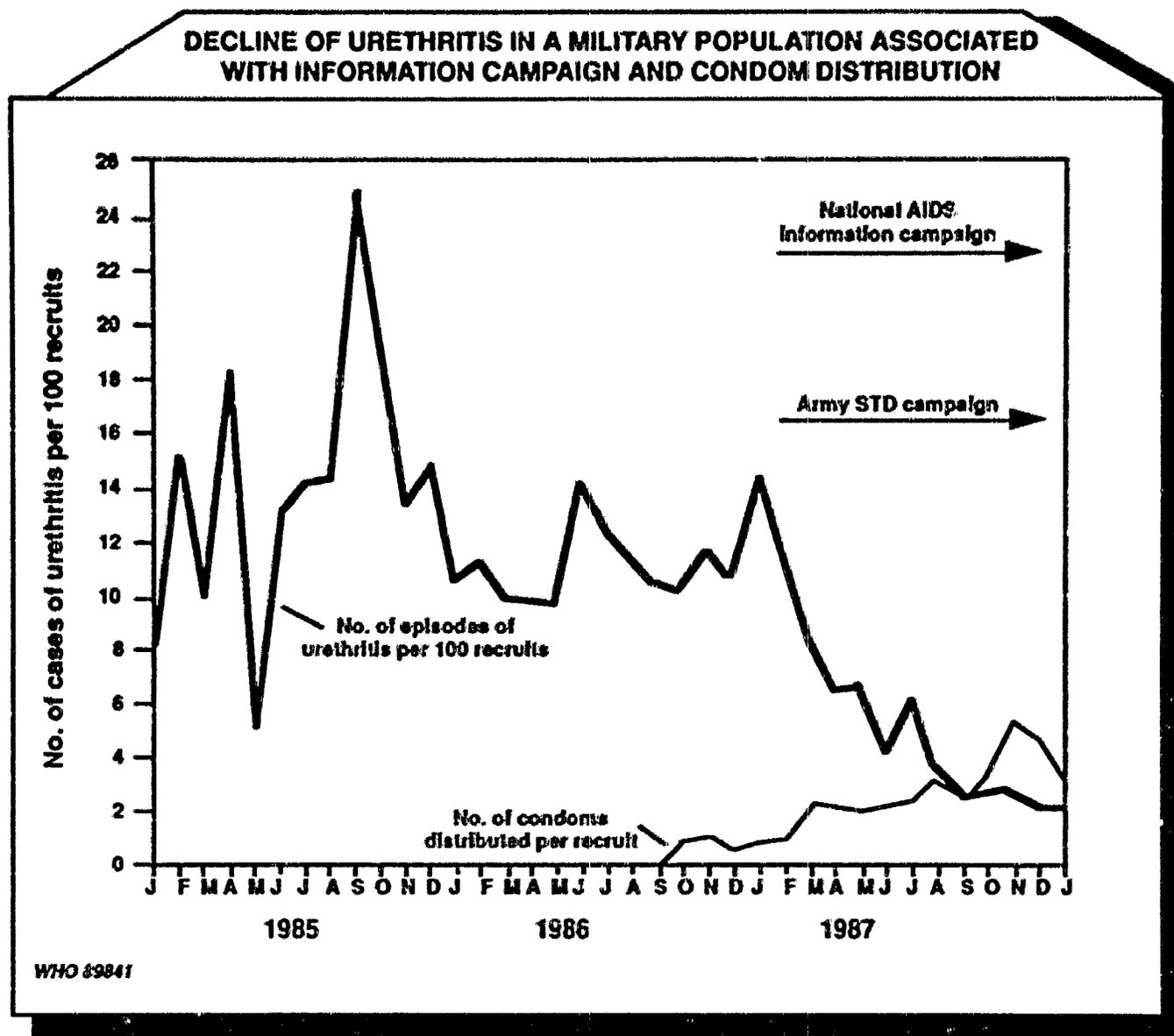


Several surveillance sites can also be used for surveillance of knowledge, attitudes, behavior, and practice (KABP) either by having a registry of simple questions at an antenatal or STD clinic, or by the performance of special, more detailed studies.

STD data in African populations can:

- serve to alert programs to the potential increased risk of HIV infection, particularly in areas HIV has not yet reached;
- signify that behaviors are changing.

FIGURE 3-11



In the military population above, the reported number of cases of urethritis declined dramatically over a six-month period, in association with very active information, education and condom distribution campaigns. This seems very encouraging. However, some observers suspect that persons with urethritis just sought care elsewhere—ashamed or fearful of getting care in the military population.

In the busy East African STD clinic represented in Figures 3-12 and 3-13, syphilis cases (shown) and gonorrhea (not shown) rapidly declined over the last several years. This drop could be due to a large number of factors, including unavailability of drugs or a decline in attention given to reporting. Alternatively there may have been a real decline, perhaps due to changes in behavior as a result of concern about AIDS.

However, chancroid cases increased during the same period. This could simply mean that there was a shift from the diagnosis of syphilis to chancroid. A more complete analysis of these trends

would require looking at other diagnoses, total diagnoses, and some on-site assessment of several variables related to clinic operation, patient attendance, drug supply, case definitions, etc.

FIGURE 3-12

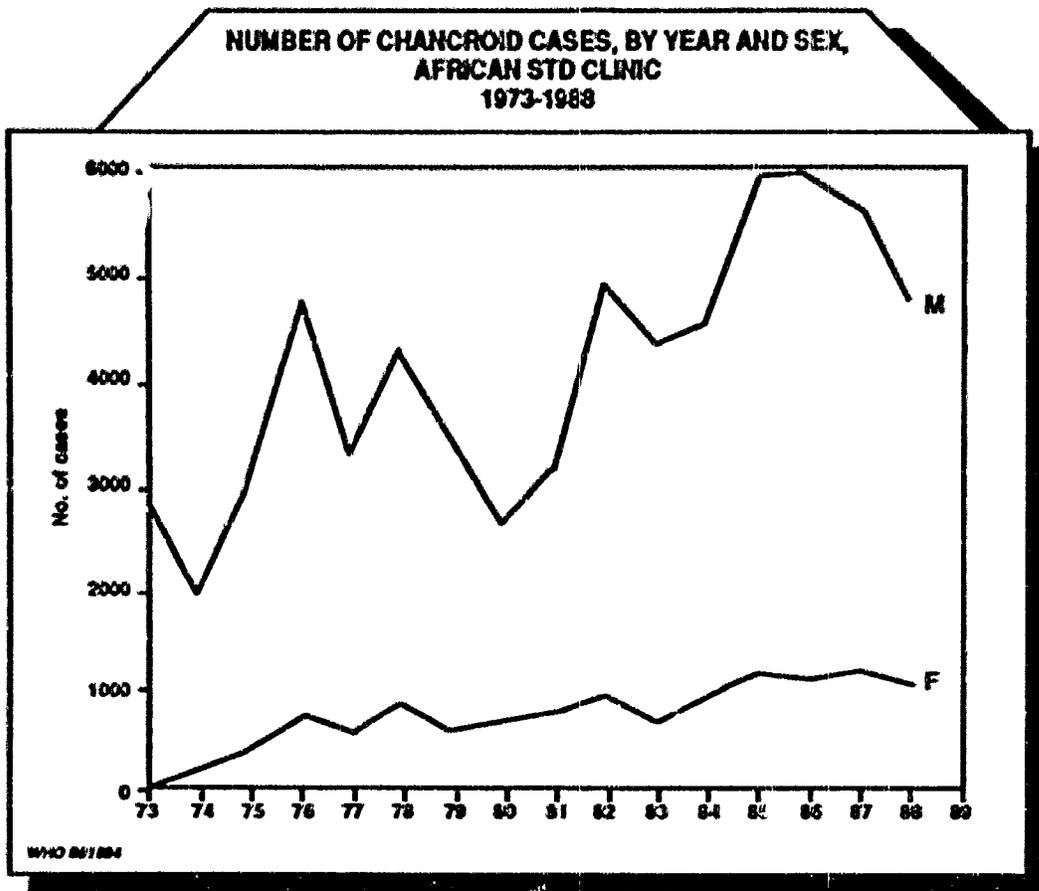
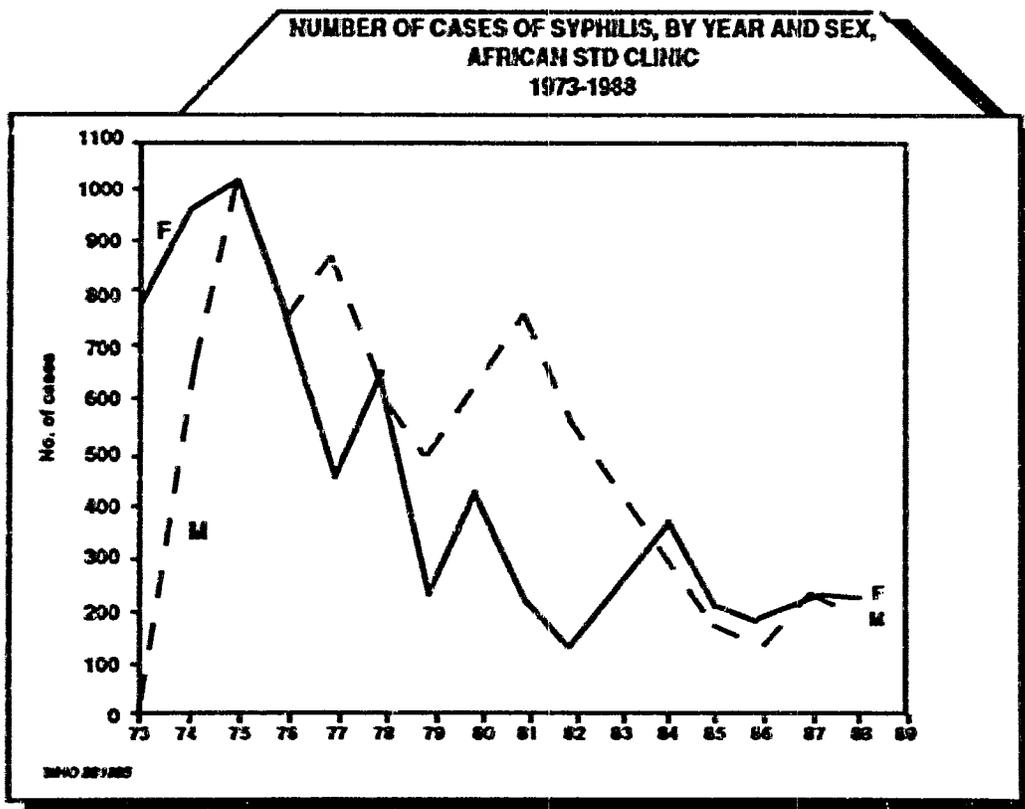


FIGURE 3-13



These examples emphasize:

- the difficulties in drawing conclusions from STD surveillance information;**
- the need for a systematic approach to the analysis of STD data;**
- the need to strengthen STD surveillance to be able to offer consistency;**
- the need for assessment of incidence/trends based on STD sentinel surveillance.**

WHO is working with countries on the development of methodologies for this work and some of the initial suggestions form the basis for the rest of this chapter.

ASSESSMENT OF INCIDENCE/TRENDS BY STD SENTINEL SURVEILLANCE

Sentinel surveillance for STD involves:

- selecting specific sites;**
- performing systematic data collection;**
- using standardized formats and case definitions.**

STD cases are seen at many health facilities. The value of reports from such facilities depends upon:

- the development of health facilities;**
- the availability of trained personnel;**
- the diagnostic skills of trained personnel;**
- the availability of laboratory support.**

Surveillance of STDs can be performed at:

- specialized clinics;**
- private dermatologists' offices; private gynecologists' offices;**
- multipurpose clinics; and**
- pharmacies, by using pharmacy records.**

The first step in initiating surveillance for STDs is to determine what facilities are used locally by patients. These sites can then be visited and their records or reports can be reviewed. National data may be of limited use—a mixture of a few reliable reporting sites, and probably more sites with less reliable information.

A system of sentinel surveillance would:

- look closely at a few sites;**
- attempt to validate and improve the quality of the information;**
- strengthen the system at those few selected sites.**

Two approaches or levels can be used to report STDs. Reports can be based on:

- specific STD diseases (gonorrhea, syphilis, chancroid, etc.);**
- STD syndromes (urethritis, genital ulcers, etc.).**

In peripheral centers or sites where laboratory facilities are not available, reports can be based on syndromes such as genital ulcers and urethritis, or on history and clinical examination.

At specialized health clinics, reports can be made for specific diseases confirmed by laboratory diagnosis. Records should reflect the number of patients treated at initial visit, the number of patients treated at follow-up visits, and the number of patients referred.

For estimating STD incidence, the essential data are the number of initial visits. The number of patients with follow-up visits and the number referred are useful for monitoring STD patient management, but these data are not useful for epidemiologic purposes. Other demographic data can also be recorded, depending on the data-management systems planned and the inputs needed for the program.

Analysis of STD Surveillance Data

The reliability and accuracy of data may not be consistent at all sites. In addition, changes in the case definitions at sites may affect the trends reported. Therefore, it is important to:

- examine data at different sites;**
- consider for analysis those sites where reports are reliable and accurately maintained;**
- identify the case definition (e.g., clinical vs. serologic vs. culture for a specific STD such as syphilis) before considering analysis.**

The number of STD cases reported as a total or by syndrome, seen within a fixed period (week/month/year), yields a numerator which can be used as such or in a rate/ratio.

To construct a rate/ratio, different denominators are possible, including:

- total number of STD cases in that period (to be used only for STD cases by syndrome or specific etiology);**
- total number of consultations in that period;**
- total population in catchment area;**
- population 15 to 64 years old in catchment area, etc.**

The numerator will be influenced not only by the incidence of STDs in the community but also by:

- the quality of health services;**
- factors such as consistency, competence, and training of personnel;**
- changes in supply of drugs, reagents and supplies;**
- possible shifts in places where STD patients get care (influenced by the negative effects of HIV testing at particular sites).**

When analyzing trends in STDs at selected sites, it is necessary to visit the site and to ask questions. The following checklist has been developed for use during such visits. Analytic results should be examined in relation to:

- program activities;
- data on knowledge, attitudes, and reported behaviors;
- trends in HIV infection.

Key areas in need of strengthening should be identified.

Rapid Assessment of STD Prevalence

In addition to looking at changes in the total numbers of cases at selected sites, it may be beneficial to perform occasional cross-sectional studies of prevalence of current STDs. These can be performed in selected sentinel populations for convenience or because of special interest. At the same time, individuals could be asked about the occurrence of STD syndromes during the previous 6 to 12 months.

The approach to obtaining cross-sectional STD data differs greatly, depending on whether the target population is composed of men or of women. This difference is due mainly to the relatively brief duration of STDs in men who have access to medical care.

Rapid assessment of STDs in women:

Data may be available at antenatal clinics. With the addition of minimal diagnostic and/or analytic resources, it may be possible to greatly improve the data obtained from antenatal consultations.

Many countries have long-established systems for routine STD surveillance of registered prostitutes. The prevalence of STDs among prostitutes is a useful indicator of whether targeted prevention programs are succeeding.

Because of the difficulty of diagnosing STDs in women, and the frequent lack of symptoms, some type of laboratory testing is probably necessary in order to complete gynecologic examination.

Rapid assessment of STDs in men:

Among men, STD prevalence is usually very low owing to the short duration of STD symptoms in men. However, many STDs are symptomatic in men, so men seek treatment and are cured if treatment services are available. Because of these factors, cross-sectional STD prevalence surveys among men are likely to necessitate sample sizes that are too large to be practical.

One suggestion for the study of STDs in men is to use the reported occurrence of STDs. Because most STDs are symptomatic in men, the reported occurrence of recent STD episodes in men could provide a measure of STD incidence in the past 6 to 12 months, assuming the reporting is relatively truthful.

For the purposes of AIDS control programs, surveys of reported STDs in men could provide an inexpensive, quick evaluation method to look at the effectiveness of prevention programs among young, sexually active men.

One example of an indicator based on male STD history is the percent of men under age 30 who have had one or more STDs within the recent past (for example, in the past 6 to 12 months).

The rapid assessment of STD prevalence and/or incidence is a promising approach to the evaluation of the impact of AIDS control programs. However, the methodologies to apply these concepts are still being developed. Programs or individuals interested in furthering this work and in helping develop methodologies can receive materials and additional information from WHO/GPA.

CONCLUSION

The backbone of HIV/AIDS prevention efforts is provided by surveillance for HIV infection, STD infection, knowledge of HIV risk factors, and practice of risk behaviors.

Surveillance can provide data to evaluate the effectiveness of prevention/control measures.

Sentinel surveillance systems allow for monitoring of trends according to systems of convenience; these systems compromise representativeness, but offer great opportunities for:

- seeing the diversity of HIV;

- recognizing that other indicators exist;

- providing a structure that allows for monitoring trends in these indices according to consistent methodologies and in consistent population groups.

This is a field that is rapidly evolving. Several materials are available from WHO/GPA on these methods for programs or individuals who are interested in furthering this work and working with WHO on improving the methodologies.

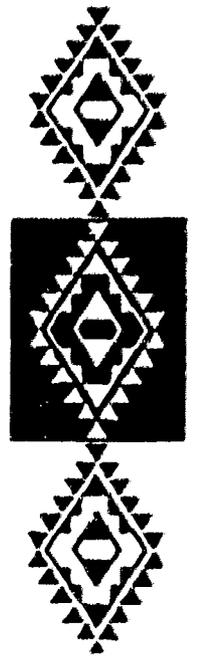
It is of utmost importance that surveillance data be used. Use requires presentation and distribution to several levels and sectors, as well as discussion, particularly at national AIDS program reviews. HIV, STD, and KABP (knowledge, attitudes, behavior, and practice) data should be helpful in assessing the relevance and adequacy of program activities, and later, the effectiveness of program strategies.

- epidemiology:** the study of the distribution and determinants of an infection, disease, or other health-related event in a population.
- incidence rate (also known as incidence):** the frequency of new infections during a designated time, as a rate of the population at risk of the infection, disease, or other health-related event.
- lot quality assurance (LQA):** a statistical method which is used to determine, with a given probability, whether the prevalence of a factor such as HIV infection is no more than a preset level. At low prevalence levels, LQA requires relatively smaller sample sizes than would be required for estimating the prevalence with the same confidence.
- participation bias:** a systematic error which occurs when those individuals or groups of individuals who elect to participate in a study differ in some important way from those persons who elect not to participate in the same study.
- period prevalence rate (also called period prevalence):** the frequency of an event during a specified period of time, as a rate of the population of interest.
- point prevalence rate (also called point prevalence):** the frequency of an event at a specified point in time, as a rate of the population of interest.
- predictive value of a negative test (NPV):** the chance that a person with a negative test result is truly not infected.
- predictive value of a positive test (PPV):** the chance that a person with a positive test result is truly infected.
- prevalence rate (also called prevalence):** in general, the proportion of a defined population with the infection, disease, or other health-related event of interest at a designated time.
- public health surveillance:** the collection of information of sufficient accuracy and completeness regarding the distribution and spread of infection to be pertinent to the implementation or monitoring of prevention and control programs and activities.
- selection bias:** a systematic error that occurs when those individuals or groups of individuals selected to be studied differ in some important way from groups or individuals not selected for study.
- sensitivity:** the accuracy with which a test can detect the presence of infection. A test with high sensitivity will have few falsely negative results.
- sentinel surveillance:** the cross-sectional studies that may be conducted based on the general population as a whole, or within selected groups of that population. When such groups in the population are selected with the objective of monitoring trends in the population as a whole, they are known as "sentinel" groups. Serially repeated cross-sectional studies in sentinel groups are known as sentinel surveillance.
- specificity:** the accuracy with which a test can detect the *absence* of infection. A test with high specificity will have few falsely positive results.
- unlinked anonymous screening:** the testing of specimens for markers of infection after elimination (unlinking) of all personal identifying information from each specimen.

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**REDUCING
HIV TRANSMISSION
THROUGH BLOOD**



PREVIEW: REDUCING HIV TRANSMISSION THROUGH BLOOD

INTRODUCTION

The country-by-country status of Blood Transfusion Services (BTS) in sub-Saharan Africa is mixed, with recurrent problems:

- the coexistence of HIV, hepatitis B, and chronic anemias presents severe problems
- the safety of the blood supply cannot be assured

Without basic supplies, equipment, and trained personnel in many places, blood banks, as understood in Europe and North America, do not exist:

- transfusions occur only in life-threatening situations
- friends and family donate blood which is not screened
- there are few records or analyses of clinical results

THE IMPACT OF AIDS

Although transfusion is not the principal means of HIV transmission, there remains a need to:

- recruit and retain the safest donors
- exclude donors with risk factors
- screen blood for HIV
- provide donor support services

ELISA tests have been helpful only in highly centralized programs and major hospitals in Africa. The arguments against the routine use of ELISA in Africa include:

- the small number of samples to be tested
- a lack of quality control
- problems with unstable reagents
- time needed to perform ELISA tests
- maintenance of equipment
- unreliable power supplies

The new generation of simple tests has proven more practical in Africa.

THE IMPACT OF HIV SCREENING IN BLOOD DONOR RECRUITMENT

Blood donor recruiters must:

- deal with fewer uninfected donors
- learn new systems of persuasion
- adapt to the loss of blood donors
- deal with the fear of acquiring AIDS from donating blood
- be prepared to counsel donors with positive results
- deter persons who are only interested in their HIV status

INTERNATIONAL ASSISTANCE

The Global Programme on AIDS has three objectives:

- to prevent AIDS virus transmission
- to care for HIV infected people
- to unite national and international efforts against AIDS

The Global Blood Safety Initiative (GBSI) aims to support the development of integrated blood transfusion services in all countries. The principles of GBSI are to:

- develop BTSs within national health plans
- develop BTSs with government sponsorship
- promote voluntary, non-remunerated blood donation

ORGANIZATION OF BLOOD TRANSFUSION SERVICES

There are four types of BTS organization:

- centralized, with one blood transfusion center for the whole country
- regionalized, with the country divided into semi-autonomous regions
- hospital-based, in which each hospital runs its own blood collection program
- mixed, with a combination of hospital and blood center collections

The objectives of all BTSs are to:

- provide an adequate supply of safe blood
- recruit healthy donors
- ensure the availability of blood
- coordinate national service and policy
- provide staff training
- provide quality assurance

WHAT CAN BE DONE IN AFRICA?

Useful types of international aid include:

- support of regional training centers
- support of new BTSs
- consultation for governments or nongovernmental organizations
- conference sponsorship

A common mistake is to provide new equipment and buildings without supplies and salaries. Initial attention to operational responsibility will help prevent any difficulties.

CONCLUSION

The creation of GBSI within WHO has introduced a new international focal point.

International assistance must be expanded.

The process of creating new BTSs is slow, but resources for blood transfusion must continue to improve.



REDUCING HIV TRANSMISSION THROUGH BLOOD

**Jean Emmanuel
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INTRODUCTION

The AIDS Epidemic in Sub-Saharan Africa

When discussing HIV transmission through blood transfusion in Africa, it is important to deal specifically with sub-Saharan Africa. The countries of Mediterranean North Africa have been significantly less exposed to AIDS¹ and have more advanced blood transfusion services (BTSs). Although principles of safe blood transfusion have universal application, this chapter will focus on the situation in sub-Saharan Africa.

The epidemic of HIV-1 infection has its epicenter in equatorial and southern tropical Africa. The countries most severely affected are:

Uganda, Kenya, Tanzania, Burundi, Rwanda, Zaire, Congo, Central African Republic, Zambia, and Malawi.

The above countries can be described as being in a "hyper-epidemic zone". Neighboring countries exhibit a "down-gradient" of HIV-1 infection, with less severe affliction through Zimbabwe to the south, Angola and Cameroon to the west, and Ethiopia to the north. There are no AIDS cases yet reported in Madagascar.¹

PRESENT STATUS:

BLOOD TRANSFUSION IN SUB-SAHARAN AFRICA

The current country-by-country status of BTSs is mixed in sub-Saharan Africa. It would be difficult to provide an exhaustive list of examples, or to recognize all the assistance which is being provided. Rather, the examples below represent the wide range found in BTS status:

Organization of a nationwide BTS has occurred through indigenous resources only in South Africa, Zimbabwe, and Namibia.

Well-structured development projects with external assistance are reaching maturity in Rwanda, Togo, Benin, Senegal, and Mali.

The national government in Burundi has taken over the BTS which was developed with the assistance of the Swiss Red Cross.

Valuable progress is occurring in Mozambique, Ethiopia, and Somalia.

BTS development is beginning in Liberia and Guinea Bissau.

Projects in Angola and Malawi have stalled.

A number of countries have made useful progress with only modest outside help, such as Lesotho, Swaziland, Botswana, and Mauritius.

In Uganda, the previously excellent national BTS collapsed during the internal strife in the mid-1970s; recovery is now under way, with assistance from the European Economic Community (EEC).

In many other countries there have been efforts by individual institutions (with or without international aid) to build up their BTS. This approach, through concentration on specific institutions, does not aid coordination and may be counterproductive from an overall perspective.

Apparently, many sub-Saharan African countries lack the infrastructure necessary for quality assurance. Recurrent problems confirm the range of difficulties:

The coexistence of HIV antibody (with a prevalence of up to 30%), hepatitis B, and the high incidence of chronic anemias presents excruciating problems to the BTS.

It is impossible to assure adequacy or safety of the blood supply when the BTS lacks policies, coordination, or quality control, and is deprived by a devastated economy of basic supplies, equipment, and trained personnel.

The reality is that in many places blood banks, as understood in Europe and North America, do not exist:

Transfusions occur only in crisis situations such as life-threatening hemorrhage after childbirth or severe hemolytic anemia in children with malaria.

Friends and family rally around to donate blood, which is quickly transfused without screening tests or satisfactory crossmatch. Often the family pays a professional donor to donate blood for their family member.

Records are scanty and there are few analyses of the clinical results of transfusions in such conditions. Transfusion is a desperate response to a desperate situation.

In these conditions the chronic shortage of blood aggravates the lack of quality assurance by perpetuating a system in which transfusions are given in emergency situations, without time for normal care in donor selection or laboratory testing and processing.

In many instances, blood is being used inappropriately. It is important to promote the appropriate use of blood and blood products to reduce unnecessary blood transfusions, and thereby reduce the risks involved.

The Impact of AIDS on Blood Transfusion Services

AIDS has had a disastrous effect upon blood safety. While transfusion is not the principal means of transmission of HIV in Africa, there are many documented cases of post-transfusion AIDS. AIDS has added to the already serious risks associated with transfusion in Africa. There remains a compelling need to:

- make extra efforts to recruit and retain the safest donors;**
- facilitate exclusion of donors with risk factors;**
- strengthen the capacity to screen blood for evidence of HIV infection;**
- provide donor support services, such as counseling for donors found to be positive for HIV.**

Addressing these needs aggravates the problem by significantly increasing the cost of blood transfusion.

Testing for HIV has presented many difficulties. ELISA tests have been found to be useful in Europe and North America, but have been helpful only in highly centralized programs or major hospitals in Africa. There are several arguments against the routine use of ELISA methods in the field:

- the small numbers of samples to be tested;**
- a lack of quality control;**
- cold-chain problems with unstable reagents;**
- the time required to perform the ELISA test;**
- maintenance of equipment;**
- unreliable power supplies.**

The new generation of simple tests (Serodia-HIV, HIVCHEK, etc.) has proven more practical in African conditions.²

Confirmation of positive HIV tests has been another problem. The ideal Western blot has proven costly and awkward in the field. Attempts to solve this by shipping out samples for confirmation are often not practical because of cost, time and safety factors. Confirmatory testing may not be necessary in high prevalence populations, since false positives are rare in these conditions.² Repeating a positive test with a biologically independent, but equally simple, test may be as reliable for confirmation as the more sophisticated Western blot or immunofluorescence. (See Chapter 2 on HIV Testing.)

The impact of AIDS on health care systems has not been all bad. A number of old problems, often ignored, have begun to be addressed:

Rational approaches to hepatitis B (for which testing is rarely attempted in Africa because of the high cost of screening and the high prevalence of immunity)³ have been placed on the agenda of the World Health Organization's GBSI (Global Blood Supply Initiative).

Syphilis and malaria are now also on the agenda of GBSI.⁴

Organized donor recruitment is increasingly being identified as a high priority, though previously this activity was almost totally neglected.

Autologous transfusions are being considered more often.

The appropriate use of blood, blood products, and their substitutes is receiving serious attention for the first time.^{5,6}

The AIDS epidemic is also bringing the uses and dangers of blood transfusion into focus. This is valuable for all concerned. International interest in solving Africa's transfusion problem will perhaps bring new resources to bear on this important subject.

Impact of HIV Screening on Blood Donor Recruitment

AIDS has put great pressure on donor recruiters. They are bombarded with questions from donors, donor group representatives, donor organizers, and the media. Recruiters inevitably become caught up in issues concerning testing, counseling, and medical follow-up. They must:

- deal with a decreasing pool of uninfected blood donors;

- learn new systems of persuasion and group leadership;

- adapt to the loss of blood donors, due to the fear of learning that they are HIV positive;

- deal with the fear of acquiring AIDS from blood donation (which is irrational, but a real fear nonetheless);

- be prepared to counsel donors with positive test results, resulting in subsequent ineligibility;

- find ways to deter persons who want to donate blood merely to learn the results of their HIV test;

- learn to deal with problems created by directed donations.

INTERNATIONAL ASSISTANCE: GLOBAL PROGRAM ON AIDS (GPA)

The global AIDS strategy has three objectives:

- to prevent AIDS virus transmission;

- to care for people infected with HIV;

- to unite national and international efforts against AIDS.⁷

The first of these objectives includes the prevention of transmission of HIV through blood. Although this embraces the spread of HIV through shared needles, syringes, scarification, tattoos and acupuncture, the primary focus is blood transfusion.

The World Health Organization's third objective reflects the consensus of interested parties that the GPA (Global Programme on AIDS) should play the leading coordinating and unifying role in the fight against AIDS. This effort has been conducted on a number of fronts, including research, informational, technical, and social. However, the principal initiative has been at the country level of National Program Support (NPS). A highly structured system of country visits and cooperative planning has included consideration of a BTS in some 150 countries. These visits and plans have included initial surveys, short-term and medium-term plans, and evaluation of progress.

Direct assistance with HIV testing of blood donors, which is the initial approach to preventing transmission through blood, has proved ineffective in many settings. This realization has led to closer analysis of the true nature of the problem. In many countries the BTS needed strengthening before it could absorb new technologies.

Accepting this fact, the GPA, League of Red Cross and Red Crescent Societies (LRCS), International Society of Blood Transfusion (ISBT), and United Nations' Development Program (UNDP) met together to plan a more creative strategy.

The collaboration between WHO, LRCS, ISBT, and UNDP led to the creation of a new WHO-based activity named the Global Blood Safety Initiative (GBSI). The aim of this initiative is:

...to support the development of integrated blood transfusion services in all countries. This includes assurance of supplies of blood and blood products which are as safe as possible, accessible at reasonable costs and adequate to meet patients' needs, thereby reducing morbidity and mortality from failure to transfuse and from complications of transfusion, including transmission of HIV and other infectious agents causing infectious diseases such as hepatitis B, Chagas' disease and syphilis.⁸

GBSI has developed a body of new literature^{5,6,9-12} designed to bring a sound perspective to international needs. Staff and consultants have:

- advised NPS systems on specific projects at the country level;**
- conducted surveys of selected countries and maintained a database on worldwide blood transfusion services;**
- organized consultative meetings.**

GBSI remains within the organizational structure of the World Health Organization and does not have an independent budget, although limited funds are obligated and held specifically for its core activities.

Principles of Global Blood Supply Initiative:

- 1. Develop BTSs within a broad context of the National Health Plan, particularly within the National Plan for AIDS.**
- 2. Develop BTSs with government sponsorship, geared to stages of local health care development, local priorities, and local resources that utilize appropriate technology.**
- 3. Promote voluntary non-remunerated blood donation; encourage appropriate regulation and coordination of blood transfusion services; and encourage proper clinical usage of blood.**

OTHER ORGANIZATIONS

There have been important contributions to this BTS development initiative by:

the EEC;

Family Health International (supported by the U.S. Agency for International Development);

Overseas Development Agency (ODA);

LRCS and several Red Cross national societies (e.g., Australia, Austria, Belgium, Finland, France, German Federal Republic, Japan, Netherlands, Spain, and Switzerland).

ORGANIZATION OF BLOOD TRANSFUSION SERVICES

Blood Transfusion Services need to be developed on a country-wide basis in order to supply the needs of all the people who require this service. Such a program may not be possible at first, but it should be incorporated into a national blood transfusion policy in order to ensure that the original objectives are not lost during the different phases of development.

Although decentralization is an important objective to be reached, it should be remembered that this can only occur in a climate in which a well-organized, centralized blood transfusion system already exists and a national policy is in place.

Decentralization cannot take place without this necessary infrastructure. The preliminary introduction of testing may have been instituted because of a concern for HIV, but this does not preclude the importance of developing the blood transfusion structure.

Effective organization is necessary before introducing new test systems. In general, there are four types of organization:

Centralized - One national blood transfusion center operates the services for the whole country, with or without satellite regional centers (e.g., Finland and Jamaica).

Regionalized - The country is divided into regions, with a considerable degree of autonomy but with different mechanisms for achieving national

control and logistic coordination (e.g., Australia, Netherlands, and France).

Hospital-Based - Each hospital runs its own blood collection program, with or without a system of regulation or coordination (e.g., Denmark and Malaysia).

Mixed - A combination of hospital-based and blood center collections (e.g., U.S.A.).

Blood Transfusion Services should be integrated into the health system with representation on the Blood Transfusion Committee/Board by the Ministry of Health, staff of the BTS, and other interested parties.

The ultimate responsibility for each BTS lies with its national government. Sometimes the government operates the program; in other instances the operating responsibility and authority are delegated to a nongovernmental organization. In many countries this decision has not been specifically made, with the result that responsibility is unclear. This forces each hospital to establish its own donor program.

The impetus for setting up a blood transfusion center should come from the Health Authorities of the country for the following reasons:

Governmental recognition and status are necessary to the organization of a transfusion structure.

Health authorities can define measures needed to ensure autonomy and limit liability.

Working relationships with a total hospital structure can be defined.

Legislation necessary for effective transfusion can be planned.

Organizations within countries that represent various classifications and that have been shown to be effective include:

Government: Sri Lanka and United Kingdom;

Red Cross/Red Crescent: Canada, Indonesia, Japan, and Rwanda;

Military: Syria;

Mixed: India and U.S.A.;

Private: Zimbabwe.

The objectives of a BTS are to:

provide an adequate supply of safe blood;

recruit healthy donors who will voluntarily give blood at regular intervals;

ensure the availability of blood at all health care centers that need blood;

coordinate a national BTS with a national blood transfusion policy in order to meet regular blood requirements, and also to meet the needs in national emergencies and disasters;

provide for the training of blood transfusion staff, professional staff, and end-users of blood;

provide quality assurance programs that include recording systems and standard operating procedures.

Leadership

The person in charge has a fundamental impact on the success of a service. The director of blood transfusion services should be strong in the following areas:

medical training, or a scientific background in blood transfusion science;

managerial and organizational skills to ensure an efficient and cost-effective service, which will be able to supply safe blood and blood products to all those in need;

leadership qualities to facilitate the development and maintenance of a BTS. A director should have the ability to:

educate policymakers;

deal with the influential;

carry out public relations exercises at all levels of society;

identify with medical colleagues and staff involved in all aspects of the service.

Sustainability

Blood Transfusion Services in developing countries are difficult to sustain in view of the expenses involved in running them. Very often, blood transfusion systems are not well understood, and the complexity of a voluntary donation of blood service with a definable cost does not seem compatible. Sometimes the medical practitioners themselves are not aware of the costs involved in the collection, testing, storage, and dispatch of blood to the bedside.

Costs become clearer when placed into categories for calculation:

Unit costs can be calculated empirically if exact costs are not available.

Broad schemes for calculation can be made on fixed expenditure items, such as salaries and building maintenance costs including electricity and water, reagent costs, and purchase cost of many items (whether they be directly purchased or obtained through a central supply system).

A budgetary figure that estimates expenditures and a unit recovery or other system can be determined with aid from government health systems, private health insurance systems, and nongovernmental organizations involved in the health sector.

Country-wide programs need to be phased in to prepare for a successful development program over a number of years. Realistic goals which have a reasonable chance of success should be targeted. A successful example can be used when seeking further funding.

Blood Transfusion Services are complex “living organisms” that require day-to-day management and evaluation. In addition, standardized procedures are inherent in such a service. The complex process of building an effective BTS can be facilitated by:

harnessing the involvement of the working staff at all levels within the service in order to form a well-structured organization;

utilizing resources within a country, such as skills in carpentry and metal work in order to improve facilities;

becoming self-sufficient in such items as cooler boxes, benches, and plasma expressers by using available elastic, rubber, and wood;

practicing careful housekeeping in budgeting and maintenance of vehicles;

carefully evaluating a country’s needs and uses of blood and plasma in order to ensure the correct mix of blood components and whole blood.

Additional funding and support can be obtained from a variety of sources:

the private sector, through influential members of society and large companies;

international aid agencies, which are presently involved in many countries through bilateral and multilateral agreements;

nongovernmental organizations, such as the National Red Cross Societies, which can be strengthened to provide donor recruitment and collection assistance.

BTS sustainability is based upon certain essentials:

The program must be needed and wanted after the discontinuation of external support. This must be anticipated in the early planning phase, assuring the appropriateness to real need.

Local resources must be sufficient to sustain the program:

A suitable organization must exist to manage the program.

Human resources must be sufficient to operate the program.

If personnel do not yet exist at the start of the project, their training and development must be an early priority of the project.

Financial resources, and the commitment to make them available, must be sufficient to retain the trained personnel and to continue the operation of the program.

It is clear that creating a new infrastructure for a BTS where none already exists is a long process. Experience suggests that it will take 5 to 15 years for such a program to reach maturity. There is "no quick fix."

WHAT CAN BE DONE IN AFRICA?

International Aid

In general, those countries with a need for international aid to create a BTS have limited resources for the operation of the program to be created. Basic principles of international assistance reflect the wide experience of collaborations that have succeeded, and others that have failed. Recurrent causes of failed projects serve as a warning to those becoming involved in international assistance for the first time.

A simple organizational structure and modest facilities are more likely to succeed than grandiose imitations of West European institutions. Complex technology may not be needed and is likely to suffer from serious maintenance difficulties. The appropriate technology should be sought before investments are made. It is tragic to find expensive equipment broken down after only brief use in situations where the real need is for straightforward organization of mobile blood collection.

Useful types of international assistance include:

1. Support of regional training centers.

Southern Africa has already benefited greatly from the strong program in Harare, Zimbabwe. Training is available both at the Harare Blood Center and through the University of Zimbabwe.

2. Support of new Blood Transfusion Services.

International gifts of capital items (buildings, vehicles, heavy equipment, training), staff-on-loan and consultation can be of great help in starting a new program. Generally external assistance with consumable supplies or salaries for personnel are undesirable because the result is usually a dependent relationship from which a self-supporting BTS does not arise. It is extremely difficult to disengage from operational support of this kind, and unilateral discontinuation of support may lead to collapse of the program.

3. Consultation for governments or nongovernmental organizations.

Supportive advice, especially when maintained with mutual trust over a long period, can be the strongest foundation of an international project. This advice should never be imposed but generously given when needed.

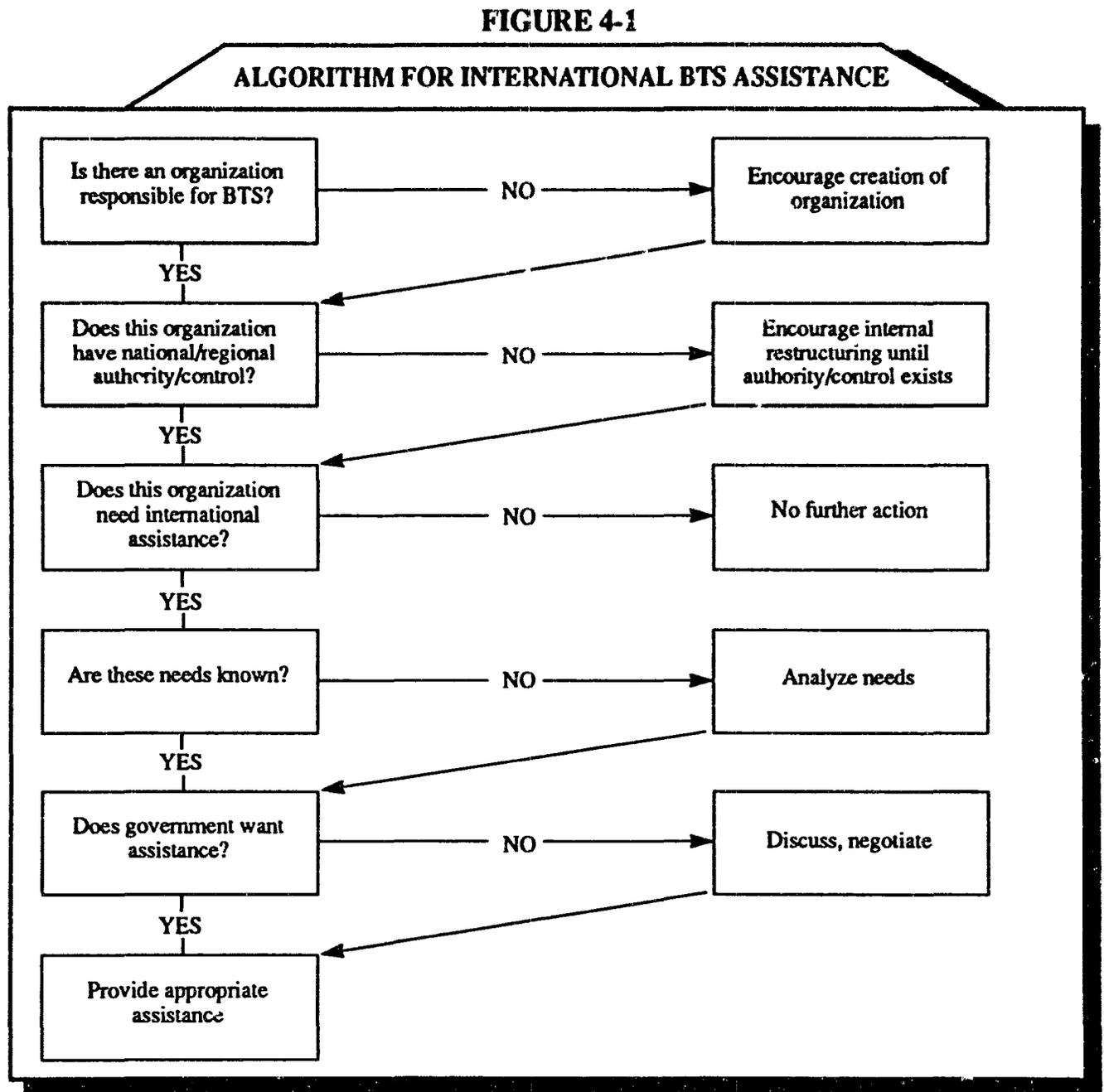
4. Conference sponsorship.

International organizations can play a leading role in sponsoring national and regional conferences which promote an exchange of experiences and information on developing technologies.

It must be remembered that the running costs of a BTS far exceed those of establishing necessary facilities. The cost of salaries, plastic collection bags, test kits for transmissible diseases, and other essential reagents are greater than the cost of heavy equipment, and constitute the major costs of operating a BTS.

A common mistake is to provide new equipment, buildings, and vehicles from external sources, but not provide consumable supplies and salaries as well. Certainly it may be necessary to contribute some generous working capital to permit the operation to get started. Problems occur when this type of operating support becomes viewed as a responsibility of the supporting organization. From the beginning, long-term operating responsibilities must be clearly accepted by the organization receiving the aid. Initial attention to operational responsibility will help prevent any difficulties establishing the program on an independent footing.

Figure 4-1 below presents an algorithm for those considering international BTS assistance:



CONCLUSION

The AIDS epidemic has had a dramatic impact on much of sub-Saharan Africa. Heightened interest in BTS programs has focused greater international resources on blood transfusion. The

creation of the GBSI within WHO has introduced a new international focal point, a new rationality, and a new body of critically important literature.

Still, international assistance must be expanded. It must be appropriate to the needs and sustainable after assistance is ended. Although the process of creation for a new BTS is painstakingly slow with no "quick fix," resources for blood transfusion must continue to improve.

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CONTROL AND PREVENTION OF SEXUALLY TRANSMITTED DISEASES

Peter Piot
Subhash Hira

INTRODUCTION

The emergence of AIDS has resulted in global awareness of the importance of other sexually transmitted diseases (STDs). As a result, an increasing number of countries have organized programs for the control and prevention of sexually transmitted diseases in conjunction with AIDS-control programs. STDs other than AIDS are by themselves an important cause of morbidity, disability and loss of productivity in Africa, particularly in women, as seen in Figure 5-1 below:^{1,2}

FIGURE 5-1

MAJOR COMPLICATIONS OF SEXUALLY TRANSMITTED DISEASES		
WOMEN	MEN	NEONATES
pelvic inflammatory disease (endometritis, salpingitis, oophoritis)	epididymitis	premature delivery
tubal infertility	urethral stricture (infertility)	low birth weight
ectopic pregnancy	neurosyphilis and cardiovascular syphilis	congenital syphilis
spontaneous abortion		ophthalmia neonatorum
stillbirth		chlamydial pneumonia
cervical cancer		
neurosyphilis and cardiovascular syphilis		

In addition to the problems listed in Figure 5-1, there is growing evidence that STDs pose risk factors that facilitate the sexual transmission of HIV infection.^{3,4} This evidence is very important to AIDS control programs, because patients with STDs are relatively easy to reach; when confronted with symptoms of infection, they appear at clinical facilities where they can be counseled about HIV infection.

GOALS AND OBJECTIVES

The two major goals of STD control are:

- prevention of transmission of infection;**
- prevention of development of complications and sequelae.**

Traditionally, programs have put most emphasis on complications and sequelae. However, as a result of the emergence of AIDS and the increasing importance of other viral STDs, primary prevention is receiving increased attention. The emphasis placed on secondary prevention in the control of STDs is in contrast with AIDS control programs, which are currently putting most of their efforts into primary prevention. However this may change as inexpensive and non-toxic anti-retroviral drugs become available.

Objectives

The two major goals of STD control can be achieved with objectives which focus on intervention strategies, such as:⁵

- reducing exposure to infection by educating persons at risk to:
 - reduce their number of sexual partners,
 - avoid sexual intercourse with persons who have a probability of being infected;
- preventing infection by promoting the use of condoms or other prophylactic barriers;
- detecting and curing disease by implementing disease-detection activities;
- providing adequate diagnostic treatment facilities;
- promoting healthy behavior;
- limiting complications and further transmission of infection by providing:
 - early and appropriate treatment;
 - counseling for symptomatic and asymptomatic patients and their sex partners.

In practice, activities guided by these objectives are interdependent.

Integration of STD Control into the Health Care System

As is the case for other disease control activities, the place of an STD control program in the existing health care structure should be carefully defined. Both vertical systems (where specific health services are referred to specific clinical components) and integrated approaches (where one clinical setting is responsible for a variety of health services) currently exist in Africa:

A vertical network of specialized STD clinics operates up to the district level in several countries such as Zambia and Senegal.

STD reference clinics function only in the major cities in other countries such as Kenya and Zimbabwe.

Other countries, such as Mozambique and Zaire, have opted for more integration of STD control activities into the primary health care system.

Advantages and disadvantages of both approaches will be discussed below. In general, we strongly advocate a policy whereby most activities are implemented at the primary health care level.

In addition to being integrated under primary health care, STD control should:

intimately coordinate its activities with the AIDS-control program;

link with other relevant activities such as mother and child health and family planning programs.

PLANNING

For optimal planning of an STD control program, information is required on:

the pattern of STDs and their complications;

high-risk groups for STDs;

social and behavioral elements relevant to STD control;

the existing health system, including health care services;

the financial capacity to support STD control.

In addition, assumptions about future trends will have to be made with regard to the:

political, social, and demographic context;

trends for the various STDs;

control measures taken.⁶

Patterns of STDs and Their Importance to Public Health

Documenting the public health importance of STDs is important for:

implementing the crucial step in program development;

convincing policymakers and donors to allocate resources to STD control.

In most countries, available epidemiologic data are very limited, and planners will have to go by preliminary estimates. Officially reported cases of STDs represent a gross underestimate of the

FIGURE 5-2

MOST IMPORTANT CAUSES OF MORBIDITY IN CAMEROON AND ZAMBIA BY NUMBER OF RECORDED CASES FOR 1987

DISEASE	CAMEROON	ZAMBIA	DISEASE	CAMEROON	ZAMBIA
malaria	671,608	1,530,733	gonorrhoea	141,623	255,065
intestinal helminths	279,791	291,454	amebiasis	32,718	NOT AVAILABLE
diarrhea	122,133	1,319,230	measles	13,142	42,767
STDs	110,994	NOT AVAILABLE	onchocerciasis	30,366	NOT REPORTED

FIGURE 5-3

PREVALENCE OF SELECTED STDs IN PREGNANT WOMEN IN VARIOUS AFRICAN COUNTRIES

COUNTRY, CITY (REF.)	YEAR	GNORRHEA*	CHLAMYDIAL INFECTION *	POSITIVE SEROLOGIC TEST FOR SYPHILIS*
Cameroon, Yaounde ¹⁹	1984	15	NT	NT
Central African Republic, Bangui ²⁰	1980	9.5	NT	NT
Ethiopia, Addis Ababa ²¹	1977	NT	NT	10.9
Gabon, Franceville ^{22,23}	1984-1989	5.5	8.3	8.0
Gambia ¹¹	1984	6.7	6.7	NT
Ghana, Accra ²⁷	1985	3.4	7.7	NT
Kenya, Nairobi ⁸	1986	6.5	19.7	11.0
Mozambique ²⁸		NT	NT	9.8
Swaziland ^{41,42}	1980	3.9	NT	33.3
Zambia, Lusaka ^{44,45}	1980-1983	12.8	NT	13.0

NT = Not Tested
*All prevalence figures in percent

problem in most countries, particularly those without a functioning STD control program. However, as shown in Figure 5-2 above, cases reported by health services may provide an idea of the relative importance of STDs as compared to other diseases.

It may be useful to convene a multi-disciplinary committee to review existing information and make best estimates for priority areas of intervention. Limited data on the prevalence of gonococcal and chlamydial infection and of positive serologic tests for syphilis are often available,

particularly for pregnant women, who may be an accessible group. These data usually provide a rough estimate of the prevalence of these STDs in the population at-large. They do not, however, define high-risk groups for STDs. Figure 5-3 on the previous page shows the prevalence of three STDs in selected African countries.

In addition to estimates of the prevalence of uncomplicated STDs, it is important to determine the proportion of complications and sequelae. Public health indicators that can be used to assess the importance of STDs include:

- proportion of men with urethral discharge of total number of male patients in primary health care clinics;
- proportion of men and women with genital ulcer disease of total patients in primary health care clinics;
- proportion of visits for infertility among female outpatients;
- proportion of cases of pelvic inflammatory disease (PID) among hospitalized women;
- incidence of ophthalmia neonatorum;
- ectopic pregnancy rate;
- prevalence of reactive syphilis serology in pregnant women;
- prevalence of gonorrhea in pregnant women.

Indicators used should include uncomplicated infections, as well as complications and sequelae in women and neonates. Data can usually be obtained from existing records of selected clinics and hospitals, although the quality of such information is often poor. In some countries data are available on the causal factors for the complications and sequelae, such as:

- the importance of maternal syphilis in adverse pregnancy outcome in Zambia;⁷
- the etiology of ophthalmia neonatorum in various countries,⁸⁻¹²
- the etiology of PID.¹³⁻¹⁵

To assist countries in STD/HIV program development and evaluation, WHO is currently evaluating simple indicators and methods for the rapid assessment of the STD situation in a given country.

Local data on the antimicrobial susceptibility of *Neisseria gonorrhoeae* and *Hemophilus ducreyi* strains are also needed for planning, since these will determine, in part, the choice of recommended treatment regimens.

Information on the economic and social impact of diseases usually heavily influences decisions about resource allocation for health problems. Unfortunately, such data are rarely if ever available on STDs in African countries. However, planners can refer to a recent World Bank-sponsored study, which found that both HIV infection and STDs are among the five leading health problems in terms of economic loss in urban Africa.²

Finally, particular STDs may be important to a population for different reasons, and criteria used in prioritization should be specified by the program. Points to be considered include:

- incidence and prevalence of uncomplicated infections;**
- frequency of complications and sequelae;**
- interaction with HIV transmission;**
- effectiveness of current intervention methods.**

For instance, gonorrhea, chlamydia, and syphilis are priority problems because of high incidence in some countries, and because the complications of these infections are important in almost all populations, regardless of incidence. However, syphilis is amenable to proven and inexpensive interventions. This is less true for gonorrhea, and even less so for chlamydia. Therefore, chancroid may be important because of a high incidence, and also because it enhances the risk of HIV transmission.

Priority Groups for Intervention

There are several reasons for targeting interventions for STD control to specific groups within the population:

Resources are limited, making prioritization of interventions necessary.

Not every member of the population is at the same risk for acquiring or transmitting STDs.

Relatively small groups of core group transmitters ("repeaters") play a key role in the spread of STDs and in sustaining an STD epidemic in a community.^{16, 1}

Targeting may increase the concentration of a message (percent of all message recipients who are in a given high-risk group).

Interventions may be more easily implemented in defined and more homogeneous groups.

Defining priority groups requires solid epidemiologic information; unfortunately, this is often lacking. However, experience from several places in Africa has shown that the following groups often have high rates of infection:

- adolescents;**
- the military;**
- prostitutes and their clients;**
- truck drivers.^{18, 19}**

In addition, populations at higher risk may be identified on the basis of age, occupation and area of residence (for example: urban versus rural, or particular neighborhoods in a large city). Finally, pregnant women are a special priority group because of the risk of adverse pregnancy outcome and of vertical transmission of STDs.

Diseases can be prioritized when programs formulate why a given group is a priority target for intervention and what the expected impact will be on the STD program. Programs should also be prepared from the start to deal with the undesirable side effects of targeting groups, such as stigmatization and discrimination.

Sociological and Behavioral Aspects

Planning an STD control program should also involve careful consideration of the societal context and the behavioral patterns in the population. Neglecting these aspects and focusing solely on the medical/technical facets may be a reason for the failure of a program. This is, however, an under-explored area which still requires much research. At a minimum, the following issues should be addressed:

- levels of health-seeking behavior among different groups of the population, particularly those most at risk for STDs;
- patterns of sexual behavior in the general population and in priority groups;
- attitudes of health care workers toward STDs and patients with an STD.

The Health Care System

Successful STD control activities are implemented in the context of an existing infrastructure. When planning a program, an inventory should be made of those existing capabilities which may be useful for STD control, including:

- training;
- availability and use of diagnostic and therapeutic algorithms;
- general quality of clinical and laboratory services;
- any special STD clinics or intervention programs (e.g., eye prophylaxis at birth, screening of prostitutes, targeted health education).

Issues of coordination with other programs should be addressed. These are discussed in the section below under program management. In general, close collaboration with the AIDS program is recommended, starting at the planning level.

INTERVENTION STRATEGIES

In countries without an STD control program, a national program should be formally launched in order to:

- achieve high public visibility for STD control;
- clearly announce the objectives and strategies.

Priority activities for STD control in many African countries include:

- health education to change sexual behavior and to use condoms;
- adequate treatment of STD patients and their sexual partners;
- case finding for syphilis, and eventually gonorrhea, in pregnant women;
- ocular prophylaxis at birth to prevent gonococcal ophthalmia neonatorum;
- screening for HIV, gonorrhea, and syphilis in high-risk groups.

Health Education

Information, education, and communication (IEC) activities are an integral part of STD control. Principles and activities are generally the same as those used in AIDS control programs, as discussed in Chapters 8 and 10 of this Handbook.

STD clinical services provide a unique opportunity for health-education activities, since clinics are visited by individuals clearly at risk for sexually transmitted infections who may otherwise be difficult to reach with IEC messages on STDs or AIDS. **Providing concise and realistic education on the prevention of all common STDs, rather than putting primary emphasis on AIDS, may enhance the effectiveness of primary prevention programs for both HIV infection and STDs.** Condom promotion and distribution is another area in which collaboration is needed between STD and AIDS programs.

In addition to messages aimed at reducing exposure to and transmission of STDs and HIV, STD control requires a special effort to promote relevant health-seeking behavior for detection and treatment of STDs. These activities are designed to:

- promote recognition of signs and symptoms of selected STDs;
- encourage patients to seek health care with competent medical services as soon as signs and symptoms of STDs are noticed;
- avoid self-medication for STDs;
- refrain from (unprotected) sexual activities as soon as signs or symptoms of an STD appear and while under therapy for an STD;
- encourage groups at risk to attend health services for case finding of STDs, such as syphilis screening services for pregnant women.

Clinical Services

Adequate management of STD patients and their contacts is the cornerstone of STD control. Early and effective treatment can reduce:

- the duration of infectivity;
- the risk of complications and sequelae.

STD management is provided through various levels of the health care system. The objectives of clinical management are to:^{5, 6, 20}

- determine the etiology of the patient's complaint;
- provide adequate treatment if necessary;
- counsel the patient on STD prevention through behavioral change and condom use;
- advise the patient to comply with treatment and to return if symptoms recur;
- encourage treatment of the patient's sexual partners;
- screen for other STDs, including HIV infection.

In developing countries, most patients with STDs are seen in primary health care settings, both in the public and the private sector, and not in special STD clinics:

A fully vertical system does exist in Senegal.

Some countries, such as Zambia, have built a network of specialized STD clinics at the district level where patients can be referred who fail to respond to syndromic management at the health center.

In other countries, such as Kenya, special clinics exist in the major cities. These special clinics often function not only as referral points but also as a first line service for STD patients.

In still other countries, such as Zaire, no specialized clinics exist and STD problems are treated in the regular health care system, and also to a very large extent in the private sector (using either western or traditional approaches).

Obviously no universal recommendations can be made as to the way STD services should be integrated into the existing health care system, since this depends on national policy. However, programs should:

provide maximum coverage and good accessibility;

assure the possibility of patient referral, either to a specialized clinic or to a competent outpatient department in the health care system at the district level.

STD referral is a problem in many developing countries because of financial, geographic and sociocultural barriers between peripheral and referral levels of care. Therefore, STD control programs should attempt to implement simplified and effective approaches for case management at the primary health care level.

A major disadvantage of vertical STD services is their poor accessibility to women. This is due mainly to the low specificity of clinical manifestations of STDs and the frequent asymptomatic status of women with STDs. The stigmatizing impact of specialized STD clinics and the often degrading treatment of women in such services are also factors.

The quality of health services in Africa is often variable; the image of STD control and the confidence of the public in the program depends mainly on the effectiveness of these clinical services. Therefore, strengthening of clinical services for STD management should be a priority for all STD control programs. Some principles of case management in primary health care settings follow:^{20, 21}

Use a problem-oriented approach to present the symptoms and signs which define the health problem to be solved. The diagnosis must be based on the history, physical examination, and simple laboratory tests, if available.

Investigations should be performed only if they influence the management of the health problem.

Limit the time spent so that correct management takes less than five minutes.

Choose treatments that are rational, and standardize treatment regimens.

Refer patients only when necessary.

Adequate Case Management

In the planning phase, national STD-treatment guidelines and clinical algorithms for case management at the peripheral level should be published based on local data (which may require some epidemiologic research). WHO guidelines^{21, 22} provide a very useful basis for such a document, which should be distributed among health care workers. For example, plastic charts containing the algorithms can be produced from these guidelines for distribution to primary health care centers.

Coordination with the Essential Drug Program is necessary to ensure that recommended drugs are available and are part of the country's essential drug list.

When designing STD management algorithms, information is required on the:

- local etiology of the health problem;
- available laboratory tests and their operational validity and cost;
- efficacy of treatment.

Management protocols should be evaluated in pilot projects in different settings in the country before they are officially recommended.

At a minimum, management recommendations should be available for the following syndromes:

- urethral discharge;
- cervico-vaginal discharge;
- dysuria in women;
- lower abdominal pain in women;
- genital ulceration;
- inguinal bubo;
- swollen scrotum;
- neonatal conjunctivitis.

Examples of simplified clinical algorithms for urethral discharge, genital ulcer disease and vaginal discharge in women are listed in Figures 5-5 through 5-7.

Counseling and Partner Notification

Counseling should be one of the chief activities in STD control, but in practice little is done in Africa. Overworked and poorly trained health care workers in busy, understaffed clinics have no room for confidential, face-to-face counseling sessions. **There is clearly an urgent need to collaborate with AIDS control efforts in order to develop feasible counseling alternatives in the context of clinical services in Africa.** The counseling message should deal with prevention of STDs and HIV, as well as with more specific issues relevant to the secondary prevention of STDs which focus on health-seeking behavior.

Partner notification can consist of patient referral or provider referral. But, as with counseling, partner notification is rarely implemented in Africa. Again, innovative approaches will have to be developed (See Chapter 9 on Counseling).

Early Disease Detection

Since many individuals with STDs may be asymptomatic for long periods of time, they will not seek early medical care. Such persons can be identified mainly by those detection programs for STDs which are an integral part of a control program. In addition, early detection of symptomatic individuals should be promoted through health education and by strengthening primary health care services. **Early detection of infected individuals followed by prompt effective treatment is effective in:**

- reducing the rate of complications (secondary prevention);

- decreasing the risk of disease dissemination in the community.

Figure 5-4 on the next page lists some criteria which can be used to analyze the feasibility and need for screening and case-finding programs.²⁴

Laboratory tests are essential for the detection of STDs, particularly in women and for asymptomatic individuals in general. Tests should:

- be inexpensive;

- use equipment which is independent, simple, rapid, and highly sensitive and specific.

This is a combination of qualities rarely available in a single test. Tests that meet the equipment criteria are becoming increasingly available for STDs, such as gonococcal and chlamydial infections. Unfortunately, these new tests are too expensive. The general quality of laboratory services in many developing countries is poor, making accurate STD detection difficult, particularly in women.

Case findings (i.e., STD detection in individuals seeking health care for other reasons) for syphilis in pregnant women in order to prevent congenital syphilis often receive high priority in STD control programs. Findings from such cases may be an initial activity used to achieve high visibility for STD control.²⁵ For example, the Zambian STD control program launched its syphilis control initiative in 1983 in close collaboration with the MCH (mother and child health) program.

The cost effectiveness of detection programs can be increased by targeting individuals or groups at high risk. These may be identified on the basis of:

- symptoms or signs (e.g., vaginal discharge, cervicitis);

- epidemiologic risk profile (e.g., sex partners of STD patients, parents of neonate with conjunctivitis);

- a focus on specific groups such as pregnant women or prostitutes.^{18, 26}

Finally, many detection programs concentrate entirely on disease detection, neglecting effective treatment of infected cases. Increasing the proportion of detected cases that are properly treated should be an important objective of STD control.

FIGURE 5-4

PRINCIPLES OF SCREENING FOR SEXUALLY TRANSMITTED DISEASES

	GC	CT	SY	HBV	CSCA/HPV	HIV
Important problem	+	+	+	+	+	+
Natural history adequately understood	+	+	+	+	±	+
Latent stage	+	+	+	+	+	+
Accepted & effective therapy	+	+	+	-	±	±
Facilities for diagnosis and therapy available	+	+	+	±	±	±
Suitable test	+	±	+	+	±	+
Social acceptability	±	±	+	+	+	±
Agreed policy on management	±	±	+	+	+	±
Cost effectiveness	V	V	V	V	V	?

GC = gonorrhea; CT = chlamydial infection; SY = syphilis; HBV = hepatitis B; CXCA = cervix carcinoma; HPV = human papilloma virus.
 + = yes; - = no; ± = both positive and negative elements; ? = questionable or unknown; V = variable.

(based on Wilson & Jungner: reference #24: 1970)

EYE PROPHYLAXIS AT BIRTH

In several populations in Africa, the incidence of gonococcal ophthalmia neonatorum is high, ranging from 1% to 5%.^{8, 27} Eye prophylaxis at birth with silver nitrate (1% eyedrops) or tetracycline (1% ointment) is the most cost-effective strategy to prevent gonococcal, but not chlamydial, neonatal conjunctivitis.²⁸ Such prophylaxis should be a priority STD control activity because:

- gonococcal ophthalmia neonatorum is a sight-threatening disease;
- effective treatment is expensive and often not available at the primary health care level;
- case finding for gonorrhea in pregnant women is usually not feasible.

Figures 5-5 through 5-7 on the next two pages illustrate management procedures when patients present with urethral discharge, vaginal discharge, or genital ulcer disease.

FIGURE 5-5

MANAGEMENT OF URETHRAL DISCHARGE IN A POPULATION IN WHICH *N. GONORRHOEAE* STRAINS ARE RESISTANT TO PENICILLIN

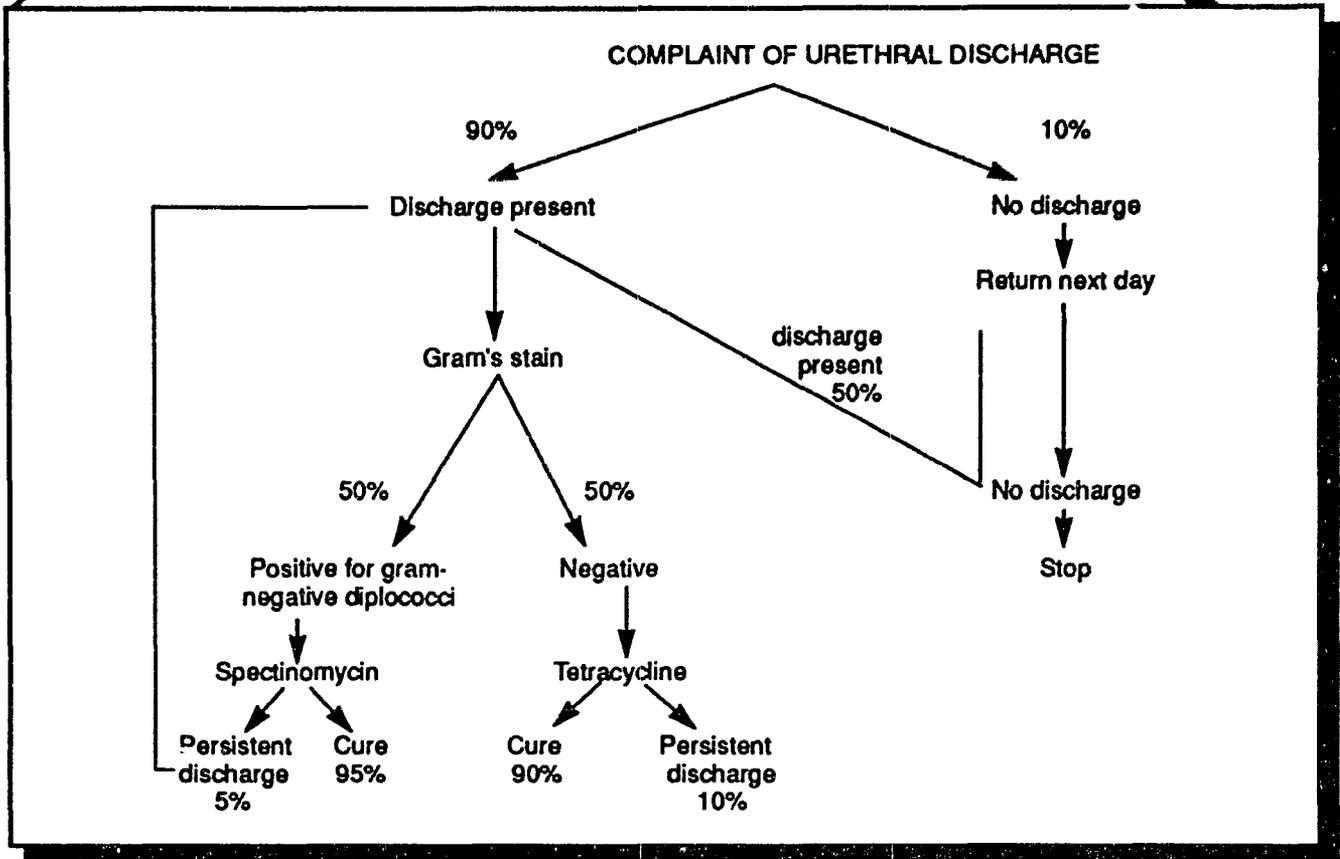


FIGURE 5-6

MANAGEMENT OF CERVICO-VAGINAL DISCHARGE (CLINICAL EXAMINATION WITH VISUALIZATION OF CERVIX BUT NO MICROSCOPY)

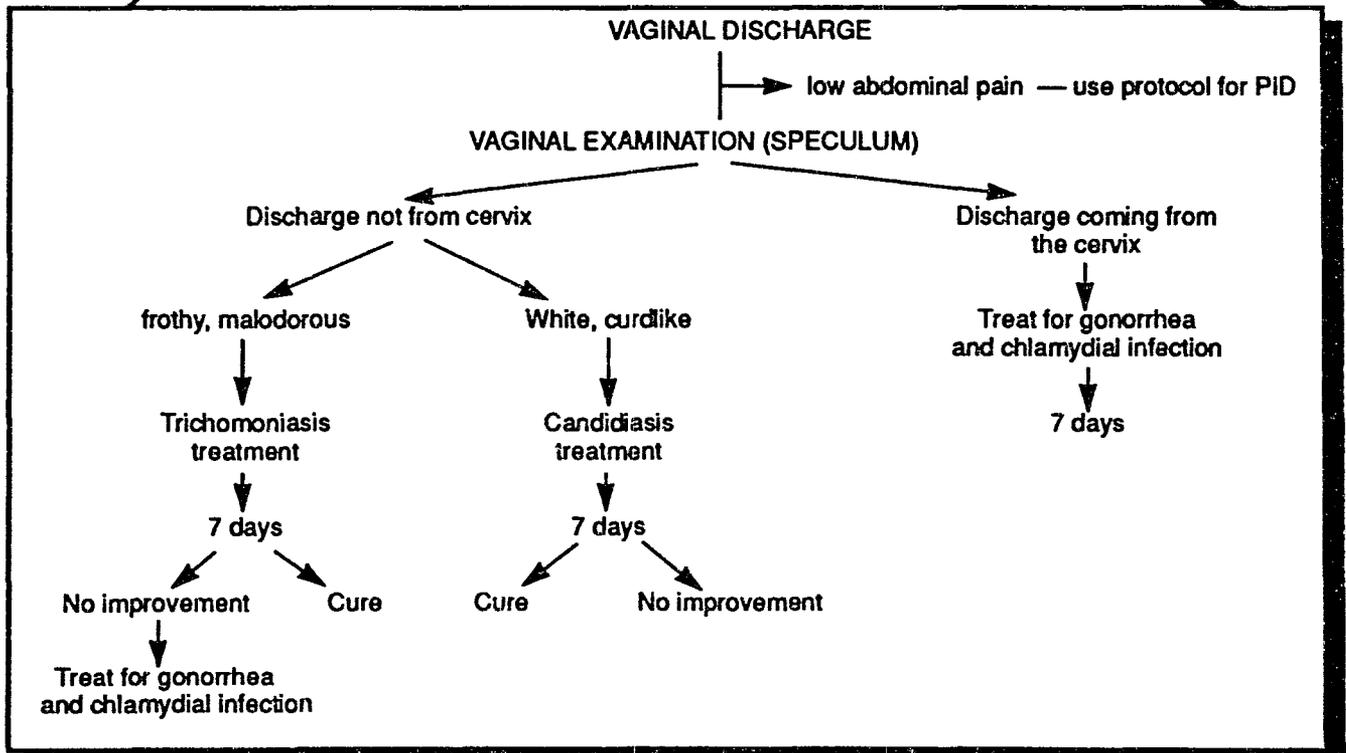
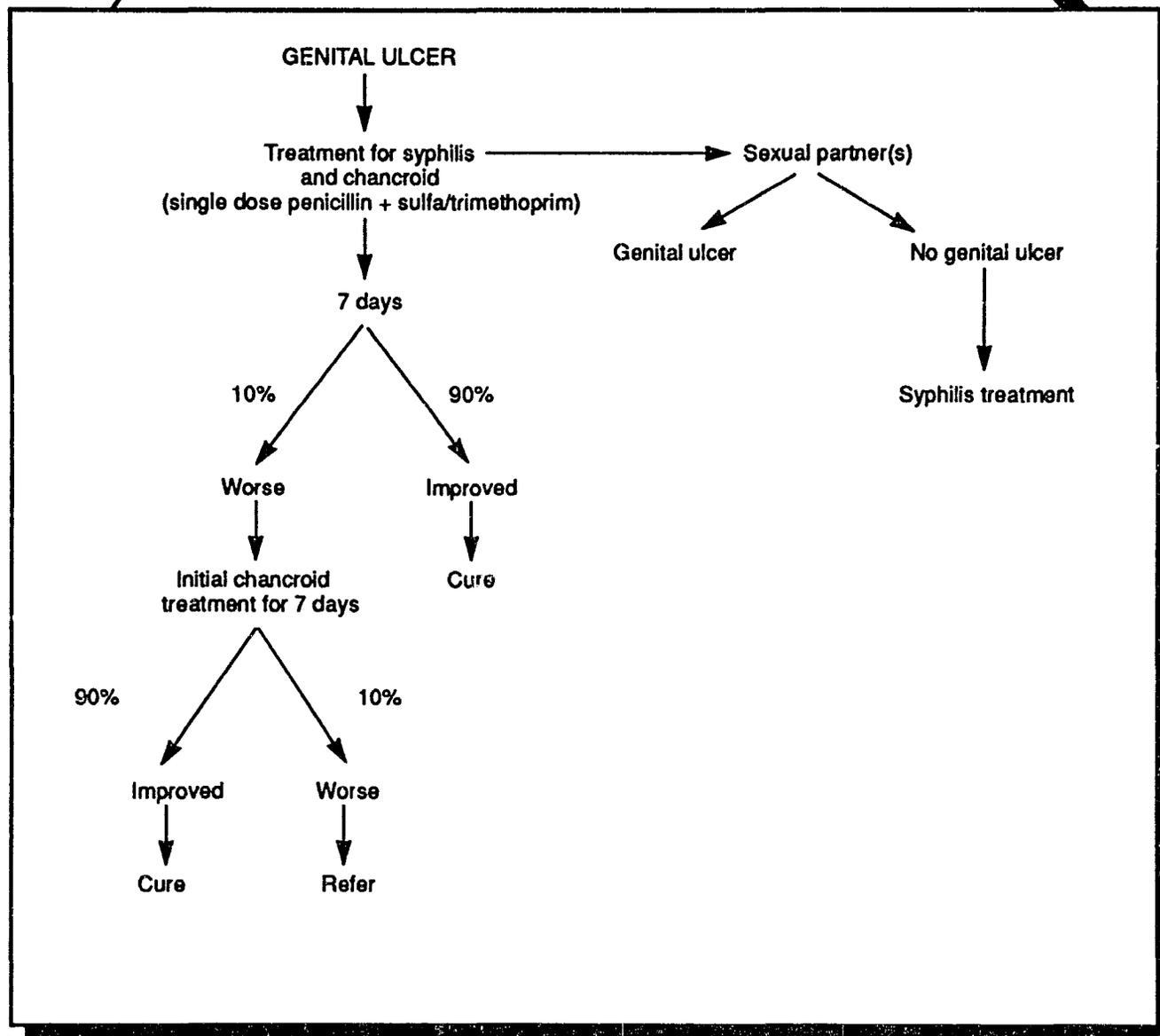


FIGURE 5-7

**MANAGEMENT OF GENITAL ULCER DISEASE IN A POPULATION
IN WHICH BOTH SYPHILIS AND CHANCROID ARE ENDEMIC**



A SUPPORT COMPONENT

Beginning with the launching of the STD program, disease control requires several support components, but it is often only when a program is fully operational that the specific role of each support component for the various interventions will become clear. Conversely, the development of the support components may indicate new strategies for intervention (e.g., the availability or lack of laboratory tests). The most important support components for an STD control program include:

- surveillance;
- training;
- laboratory support;
- research.

Surveillance

Health policymakers need reliable data on the importance of a disease and on the effect of control interventions. Epidemiologic surveillance aims at defining the prevalence and incidence of the most important STDs in various populations and monitoring trends in disease. The data collected should be analyzed on a regular basis by the STD program, and effectively used to re-orient interventions if necessary. If reliable surveillance activities exist at all, the information collected is often not used by program managers. This is very unfortunate, since surveillance of STD incidence may also provide useful and sensitive indicators for the impact of health education activities on both STD and AIDS control programs. To make efficient use of resources, close collaboration is essential in this area. The following approaches have been used in STD surveillance:

In many countries clinicians are required by law to report STD cases to the Ministry of Health. This approach rarely functions satisfactorily, and is often biased in many ways, particularly with regard to STDs in women. Generalized clinician reporting should provide:

- an estimate of the incidence of STDs in the population;
- an indication of the burden of STDs on health services;
- projection of drug supplies needed.

An example of a simplified reporting form using syndromes rather than diagnoses is shown in Figure 5-8 below.²¹ This table can be used in conjunction with the clinical algorithms

FIGURE 5-8

WEEKLY/MONTHLY CLINICIAN STD NOTIFICATION FORM

Clinician _____ Week (month) _____ Year _____
 Location _____

SYNDROME:	No. of patients treated, initial visit	No. of patients treated, follow-up visit	No. of patients referred
Urethral discharge			
Balanitis			
Swollen scrotum			
Vaginal discharge			
PID			
Conjunctivitis in newborn			
Genital ulcer	Men:	Men:	Men:
	Women:	Women:	Women:
Bubo	Men:	Men:	Men:
	Women:	Women:	Women:
Other STDs	Men:	Men:	Men:
	Women:	Women:	Women:

(from WHO/ VDT/85.437)

mentioned before, and provides some information on the capability of clinical services to deal with STD patients (percent of referred patients):

Sentinel surveillance and periodic surveys are two distinct forms of surveillance. In comparison, routine reporting presents several problems:

It requires a considerable effort.

It is expensive.

It may present serious biases.

It often does not function properly.

Consequently, sentinel surveillance is preferred by many programs. This form of surveillance collects data through a network of representative health care facilities or through periodic surveys of specific populations, often including pregnant women, general outpatients, patients at STD clinics, and prostitutes. Serosurveys for HIV infection should include serologic tests for STDs, such as syphilis and chancroid.

Surveillance based on laboratory activities present obvious problems when used to assess the epidemiologic situation of STDs:

Only a fraction of diagnoses involve laboratory tests.

Patients with complicated infections and poor response to therapy are over-represented.

However, it may be useful to monitor the level of laboratory activity in the program and provide information on trends in antimicrobial susceptibility of *N. gonorrhoeae* strains.

Training

STD control training of health care workers on all levels is usually poor to nonexistent in the regular school curriculum in most countries. This results in poor case management of patients with STDs, little attention to health promotion and counseling, and poor motivation by health care workers to support STD control activities. Therefore, training should be an integral part of the STD control program right from its start.

For efficient use of resources, training should be coordinated with AIDS-control program activities, and initially focus on training a cadre of skilled trainers who can subsequently train peripheral health care workers. However, before initiating STD training programs, the objectives of training for the different levels of health care workers should be clearly defined. Intervention strategies at all levels should also be clear. Training should not be limited to public health personnel only, but also involve the private health care sector, pharmacists, and community workers involved in IEC. Training should be:

practical and comprehensive;

able to deal with the various aspects of STD control, not just diagnosis and treatment;

developed or adapted by the STD control program in order to be used at the peripheral level;

part of the regular curriculum for physicians, nurses, and laboratory technicians.

Medical students and postgraduate trainees in specialities such as obstetrics and gynecology should receive practical training in STD control at a proper health care facility.

Some programs offer in-service training for clinical officers at the national STD reference center. For example, three months of in-service training is conducted annually at the University Teaching Hospital in Lusaka. By 1989, 68 clinical officers were trained; three quarters of them are in full-time STD practice at a referral level.

Laboratory Support

Laboratory services are often among the weakest components of the health system in Africa. Nevertheless, they are indispensable for:

- diagnosis of important STDs in women (syphilis, gonorrhea, chlamydial infection) and men (syphilis);

- case finding and screening (e.g., syphilis screening in pregnancy);

- diagnosis of complicated cases;

- surveillance;

- monitoring of antimicrobial susceptibility to *N. gonorrhoeae*.

Strengthening laboratory services is severely handicapped by:

- lack of resources (particularly foreign currency to purchase laboratory reagents);

- insufficient number of properly trained laboratory technicians;

- inadequate and poorly maintained equipment;

- lack of prestige of laboratory medicine.

In addition, a lack of coordination often exists between laboratory services and the control program. This may lead to:

- the use of tests that are not adapted to the program activities;

- delayed reporting in case-finding programs which results in low treatment rates of infected persons;

- scarcity of tests where they are most needed.

Since a major effort is being made to introduce serologic diagnosis of HIV infection, we have a unique opportunity to strengthen laboratory activities for STDs at the same time. At a minimum, the following should be made available to health care services involved in STD control:

- RPR tests (or equivalent);

- microscopic examination of a wet mount and Gram-stained smear.

The level of health services at which these tests are available will depend on the degree of development of laboratory services and on the available resources. The next priority is the availability of laboratory diagnosis of gonorrhea in women. However, this will rarely be available outside tertiary referral centers.

There is an urgent need to develop and evaluate inexpensive and simple tests for the diagnosis of gonococcal and chlamydial infection in women.²⁹ A bench-level laboratory manual for STDs is available from WHO.³⁰

Research

Major changes in STD control strategies were the result of research in biomedical, epidemiologic, and behavioral areas. Each national STD control program should have a research component, which usually concentrates on operational research useful to STD control. Priority areas for research were recently defined by WHO.²⁹ They include:

- the epidemiology of common STDs in the country;
- evaluation of indicators for surveillance and assessment;
- demonstration projects;
- evaluation of treatment regimens;
- field testing of standardized protocols;
- studies on health-seeking behavior;
- KABP (knowledge, attitude, behavior, and practice) surveys.

Program Management

Because of the complexity of STD control and the involvement of many sectors of the health system and society, a special unit directing STD control is needed within the Ministry of Health. It should have normative, technical, and logistic functions:

It should coordinate resources and activities within the program and with other programs—particularly primary health care and AIDS control.

It should be responsible for evaluating control activities and their support.

This unit should be headed by a full-time manager with a public health background, who can be assisted by a national STD committee.

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COMMUNICATION FOR AIDS PREVENTION IN AFRICA

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INTRODUCTION

Africa has a long and distinguished history of using communication for development:

Tanzania pioneered some of the world's first national health campaigns in its "Man is Health" and "Food is Life" programs of the 1960s.

West Africa opened the field of radio forums for community participation.

East and southern Africa are using radio to improve classroom instruction in novel ways.

Mass media and advertising play a growing role in African life, particularly in the large urban centers.

Traditional media (song, folk theatre, and storytelling) continue to influence millions in the rural and urban regions of the continent.

Today these communication resources are being mustered in the battle against AIDS. But Africa must be understood in its complexity and diversity.

There is no one "African approach" to AIDS – no one "African response" to HIV infection. There are:

forty-one different countries in sub-Saharan Africa;

twenty-one different language groups, with thousands of dialects;

hundreds of cultural and tribal traditions which distinguish people in important ways.

Indeed, HIV infection itself, as has been demonstrated in other chapters, varies widely in severity and intensity throughout the continent. Our first lesson as communicators is to understand that the term "Africa" is a convenient shorthand, glossing over a huge variety of practices, beliefs, cultures, languages, religions, and histories.

Any reference to "African strategy" or "African programs" can have little real meaning to a communication specialist sensitive to the importance of audience characteristics. We must:

give up this notion of "Africa" in favor of a more serious look at "people practicing high-risk behaviors";

ask ourselves what behaviors place people at risk and how we might influence those specific practices to help reduce the risk of infection.

Despite the diversity of the African continent, many sub-Saharan African cultures do share certain characteristics that distinguish them in large part from other regions of the world, such as:

strong tribal communities;

the responsibilities and roles of extended family networks;

a dual reliance on both traditional and cosmopolitan medical systems.

While the concept of audience segmentation is vital to the communicator, understanding the common constraints and opportunities shown in Figure 6-1 below will also help improve the choice of communication strategies to reach large numbers of people effectively.

FIGURE 6-1

**COMMON OPPORTUNITIES AND CONSTRAINTS
IN MANY AFRICAN SOCIETIES**

OPPORTUNITIES	CONSTRAINTS
<p>High infection rates in some areas which make the problem of AIDS clearly visible and salient</p> <p>Growing mass-media infrastructure in urban areas</p> <p>Growing political support and understanding of the seriousness of AIDS and its threat to the economic and political health of the nation</p> <p>Centralized, governmental decision-making</p> <p>The tradition of oral storytelling and song as a means of mass education</p> <p>The changing role of women</p>	<p>Inadequate health services and health infrastructures, particularly in rural areas</p> <p>Many competing health problems, both acute and chronic</p> <p>Limited communication infrastructures in many rural areas</p> <p>Breakdown of traditional norms in urban areas</p> <p>Low literacy rates, particularly among women</p> <p>Limited epidemiologic understanding of the AIDS problem</p> <p>Limited expertise with communication research and the skills of conducting audience and behavioral research</p> <p>Limited resources, both financial and human</p>

As we look at the short history of AIDS in Africa, we can identify at least two categories of response which parallel, to a large degree, the world's overall response to AIDS and which have shaped the use of communication to fight HIV infection:

There has been a response of denial, a refusal to acknowledge at a national level the terrible threat that AIDS may represent, and a more personal denial among millions that they themselves might be at risk of such a disease.

There has been an emphasis on information as a way to fight denial – an explosion of posters, pamphlets, radio shows, and news broadcasts “teaching” the facts about the new terror. Behind the emphasis on information was clearly the hope, and often the belief, that the facts about AIDS were enough for people to protect themselves from infection.

As we look at Africa today these are not sequential stages, but rather complex human responses to a terrifying disease – responses which interact, coexist, and shape programs in unpredictable ways. We still see denial – we still see an emphasis on information alone – but there is also an emerging awareness that:

denial cannot survive the reality of growing infection rates;

information alone is not enough to prevent HIV transmission.

In this chapter, we will briefly review the characteristics of each response. We will make the case that the challenge for Africa now is to move beyond denial, beyond information, toward more targeted and integrated programs of prevention, using communication as a means to understand, reach, and influence people at most risk.

YESTERDAY: THE LEGACY OF DENIAL

AIDS has created a special dilemma for the communication planner in Africa. Africa was the first region of the world to be victimized by international misinformation on AIDS:

Early western press reports “blamed” Africa as the source of the AIDS virus.

All the countries of Africa were lumped together by the foreign press as though they were a single homogeneous cultural group. African students and African visitors abroad were unfairly singled out for HIV screening and discrimination.

Local tourism and trade suffered under the wild rumors that “all of Africa is devastated by AIDS.”

Quite naturally, many African leaders felt embattled. Misinformation and wild rumors began an **Age of Denial for many countries**. Initially, many African governments were reluctant to launch major educational campaigns at home because of the fear they would only feed the negative stereotypes abroad.

Recently, however, countries have emerged from this period of anger and frustration to create innovative responses to the AIDS challenge:

Uganda's "Love Carefully" campaign;

Zaire's "Attention Na SIDA";

Ghana's dramatic film of a young woman suffering with AIDS.

These are only a few examples of how Africans from both the public and private sectors are working to protect their societies from AIDS today. The legacy of denial has given way in some countries to an emphasis on information as the means to prevent the spread of HIV infection.

TODAY: AN AGE OF INFORMATION

The goals of an Age of Information are to:

alert a nation to the facts about AIDS;

give people the information they need to protect themselves from HIV infection.

What is AIDS? How is it spread? Who can get it? What can I do to protect myself? Where do I go for more information?

When AIDS was a new disease, there was an obvious need and an obvious role for communication. Countries all over the world turned to health educators and to the press to "tell the people the facts" about AIDS so they could protect themselves from infection. The hope was that "knowledge would set them free."

Three forces have helped to shape this Age of Information:

government campaigns;

press reports;

public rumors.

Each has helped shape the popular image of AIDS – an image filled at different times and at different levels with personal denial — with both fact and fiction. In this section we will describe briefly how these three forces have been used in Africa to inform, and how we might continue to use them as we move beyond information toward the concept of prevention.

No matter what the vehicle, there has been a difference in information strategies between countries and regions of different HIV prevalence:

Areas of low prevalence have concentrated on education, and surveillance has been integrated with primary health care activities.

Areas of medium prevalence have used general education to the public and targeted education to the populations at greatest risk, such as STD patients and prostitutes, combined with promotion and distribution of condoms where appropriate.

They often publicize an information source (hotline or health center) where additional information on AIDS can be found, and try to lead people to new sources of information.

The strength of national information campaigns is twofold:

They are aimed primarily at building correct knowledge about AIDS.

They can help create societal understanding and support for controversial new practices.

National information campaigns also have drawbacks:

If not carefully planned they can be superficial, spreading myths as well as counteracting them. In several countries, for example, mention during the national campaigns that "HIV can be transmitted through blood" has led to the public misconception that individuals can get AIDS by "donating" blood as well as by receiving infected transfused blood.

Some campaigns have inadvertently promoted negative stereotyping of certain populations and given false confidence to other groups. For example, in some countries female sex workers have been singled out as those most infected. This has led not only to stigmatization of these women, but also to an erroneous and dangerous belief by other people who have multiple sexual partners that they themselves are not at risk of infection.

Campaigns can create demand for services or products which are in short supply, thereby creating public frustration and furor.

Campaigns can be expensive, although the cost per person reached may be among the lowest of all the strategies.

Using Fear versus Positive Imaging

Although many national information campaigns have made use of fear to discourage people from performing a multitude of behaviors, relatively little is known about its persuasive effect. We do know that fear is a complex phenomenon, is emotional, and irrational.

At a seminar held in Washington D.C., experts in clinical and social psychology, advertising, and public health discussed recent research on the use of fear in health communications. In a report of the seminar, Porter Novelli, a major public-relations agency, concluded that:

the effects of a fearful message depend on the perceptions of the audience's vulnerability, susceptibility, and sense of control – through which they process the information.

The seminar concluded that for real behavior change, a person needs both a motivating component (fear) and an action component (a detailed program for change). Neither component works alone. The participants of the seminar developed guidelines for using fear appeals in health messages:

Realize that individuals may react differently to different appeals.

Choose a credible spokesperson.

Make the message as personally relevant as possible.

Encourage a sense of personal empowerment.

Aim for immediacy in the message.

Be aware of the overall effect of the message.

Consider the effect of fear appeals on other health “influentials.”

Realize that fear appeals may have a significant “wearout factor.”

Realize that fear appeals may be more appropriate in messages that advocate avoiding, rather than doing, something.

All in all, national information campaigns have been among the most popular strategies of an Age of Information. Campaigns still hold benefits for an Age of Prevention if they are:

properly organized;

regularly conducted;

targeted at specific audiences with useful messages.

Their great value for the future will be their ability to:

keep AIDS on the public agenda;

stimulate widespread societal support for AIDS prevention;

create a conducive environment for new practices by providing an umbrella that shelters the intensive behavior change programs from public furor;

help create new societal norms that support less risky behavior.

Press Information Programs

During the Age of Information, the press has been a primary source of information concerning AIDS in many countries of Africa. Too often, however, press reports have fostered and spread false information on AIDS, such as the origin of the disease or claims of drugs to cure the disease. Undocumented reports of miracle cures and the association of AIDS with some uncontrolled germ warfare experiments have confused, frightened, and alienated people in many countries. **Some samples of press coverage are shown in Figure 6-3 on the following page.** Not all press coverage has been negative, however; some of the most powerful press stories have been human-interest coverage, demonstrating that people with HIV infection can play useful roles in AIDS prevention – humanizing the face of AIDS for a skeptical public.

EXAMPLES OF PRESS REPORTS ON AIDS

Zinatha urged to join anti-Aids campaign

Herald Reporter
ZIMBABWE'S traditional healers have been urged to join the anti-AIDS campaign by educating their patients on how to prevent the disease.

Sixty-five

7:

N'ANGAS CANNOT CURE AIDS, MINISTRY WARNS

Do not dismiss n'angas on Aids: Chavunduka

THE president of Zinatha, Professor Gordon Chavunduka, said yesterday it was wrong for the Secretary for Health, Dr. Daniel Makuto, to dismiss claims by some traditional healers that they had a cure for Aids without first analyzing such medicines.

Traditional healers were not unscientific and their discoveries were the results of experimentation and trial and error, said Prof. Chavunduka in his press statement, commenting on remarks

prevention of sexually transmitted diseases, including AIDS, through the use of condoms, prevention of the spread of AIDS through

Dr. Evaristo Marowa said the was stated in 1985 when

what AIDS is and how to prevent it. The seminar for Zinatha was being held because traditional healers dealt with a large number of people, especially in the rural areas. They could help in the control program.

Zinatha president, Dr. Gordon Chavunduka said the cooperation now being shown by the Ministry of Health in working to

Bogus claims on Aids

THE statement by the Ministry of Health prohibiting



A press information program should be designed to:

- help the press avoid the pitfalls of false information;
- educate and motivate the press towards responsible AIDS education;
- use the power of the press to help reduce stereotyping and increase the spread of more accurate information.

Specific supports that have been proven useful in reaching the press include:

- training specific members of the press to be AIDS experts and liaisons with the government;
- preparing information kits which are both useful and attractive to the press;

providing information to government officials on press procedures so that the government may more effectively use the press;

holding regular press conferences with the National AIDS Committee and the Ministry of Health; and

arranging speakers' bureaus of experts familiar with press needs and skilled in media interviews.

The World Health Organization has compiled a manual entitled *Broadcasters' Questions and Answers on AIDS*, which has been distributed widely throughout Africa. Still only a few countries in Africa – such as Uganda, Sierra Leone, Malawi, and Kenya – have explored the potential of press education programs. This is an area of great potential as we move from just giving information about the AIDS epidemic to the more complex task of preventing HIV infection.

Interpersonal Networks: Building “Positive” Public Rumors

A rumor is a piece of unsupported information received from another person – usually face to face. For example, the nightly radio news says “Scientists report that AIDS cannot be transmitted by mosquitoes...” But the next day a friend tells us, “I saw an article that says that mosquitoes can transmit AIDS...” Whom do we believe? Because the face-to-face contact has special credibility for most of us, we are more often persuaded by the friend's rumor, even when the information is challenged by the government or some other “official” source. The rumor creates a sense of doubt and confusion.

Interpersonal networks – churches, schools, health centers, work places – are potential breeding grounds for “positive rumors,” which are:

factual pieces of information passed on informally from one individual to another.

While few governments ever think about their training programs in this way, in fact, face-to-face tactics are a way to build channels for the “positive rumor.” In the Age of Information, some programs have used existing social networks to build “positive rumors,” correct information diffused through multiple interpersonal channels.

As we enter the Age of Prevention, government and private AIDS prevention organizations in some parts of Africa are trying creative approaches to:

encourage community-wide information on AIDS;

create “positive” rumors which underpin official announcements and campaigns.

Examples of promising approaches include the following:

The Military. Distribution of condoms and AIDS brochures has often been accomplished more easily among military personnel than the general public. Well-informed military personnel can have a considerable impact on their spouses, families, and non-military friends and

colleagues. **Kenya, Uganda, Ghana, and Tanzania all have military-based AIDS prevention programs now under development.**

Schools. Adolescents represent a population at potential risk for HIV infection. As adolescents enter the years of sexual activity, they must be informed of the threat of AIDS. Yet students often distrust information from authority figures. **Peer networks in Uganda and Malawi are proving a useful means to build the positive rumor channels for this audience.** Students also represent a distribution resource of unique proportions. Properly organized, students can deliver millions of pamphlets throughout neighborhoods and villages. They can help organize “AIDS Awareness” days in their communities. They can speak up for the facts and help debunk the myths if they are properly informed, motivated, and empowered.

Private Sector. Companies, workers’ organizations, cooperatives, and labor unions are also playing a key information role in the distribution of AIDS prevention messages and services in some parts of Africa. Businesses and worker organizations have sponsored AIDS Awareness days, distributed condoms and fliers, and helped AIDS-prevention teams monitor the effectiveness of national campaigns. **In Uganda, a well-organized AIDS In the Workplace program is now under way, including training for some twenty industries in Uganda designed to reach 50,000 workers. In Zaire, a discordant couples program – in which the workplace setting is being used to deliver messages to couples, rather than just individual men or women – is showing promising results. And in Sierra Leone and Uganda, a program for taxicab drivers shows that information can be disseminated in innovative ways.**

In some countries, governments are using the services of private organizations like advertising agencies to help develop national strategies. **In Ghana, a local agency (Lintas Ghana) produced a dramatic film on AIDS which helped thousands understand the human dimension of AIDS in the life of village women.** Another common approach is to encourage the involvement of private voluntary groups. **In Rwanda, the Red Cross has focused AIDS education campaigns at truck drivers who can take the message from town to town (while they also may be persuaded to avoid infection themselves). Bartenders are being recruited for special AIDS-education courses so they can inform and educate customers.** In many parts of Africa, networks of folk singers, traditional storytellers, rural theatre performers, and marketplace vendors are developing appropriate folk tales about AIDS prevention. Family planning organizations have been particularly active and effective in the fight against AIDS in some parts of Africa.

Religious Groups. Consistent with the initial stance of denial, some religious groups have ignored AIDS prevention. Unfortunately others have taken an aggressively negative stance, asserting that people stricken with AIDS “deserve” the disease. Many of these early reactions have faded as people learned more about the disease and recognized that HIV

is a virus capable of infecting all people. We have learned the importance of involving representatives from religious communities in planning prevention campaigns from the earliest stages in order to help build their understanding and support from the beginning. Where this has happened, the support of religious leaders has been tremendously powerful.

Traditional Healers also have a special role in AIDS prevention in Africa. Traditional healers, particularly those who are active in the treatment of sexual disorders, are becoming useful spokespersons for the idea of fewer sexual partners. They can help to control the wild claims of “miracle cures” for AIDS which often confuse and mislead the public. They can also help to alleviate some of the symptoms of AIDS-related illnesses. But, again, this involvement requires a sensitive understanding of their role in society and an aggressive outreach strategy to involve them in positive ways.

Local Actors, Sports Heroes, and Political Figures can also promote “positive rumors” through public endorsements and fund-raising efforts, as well as give credibility to national AIDS programs. This is particularly powerful in cases where government information may be less credible. **Theatre groups and storytellers in Tanzania, Zaire, Uganda, and Kenya** are becoming potent AIDS messengers helping to shape the “positive rumors” which lead to lasting change in societal values about AIDS and high-risk behavior.

Persons with AIDS are also beginning to serve as educators and spokespersons in Africa. However, public sensitivities are still such that these people must participate in programs without going public about their HIV status. They are teaching through courageous examples about the disease and its consequences, as well as offering research and planning assistance to national programs. These individuals can be the most powerful sources of positive rumors – clarifying falsehoods and demystifying the disease.

As we look at the experience in Africa of organizing interpersonal networks during the Age of Information, several lessons emerge which may help us continue and expand the development of these vital resources. **Specific suggestions to government policy-makers include:**

Emphasize traditional media – singers, storytellers, healers – as well as modern mass media.

Make community participation an integral and ongoing part of the national plan. Don't let it be just something that others are doing.

Actively recruit and invite participation of private groups in AIDS prevention programs – both commercial groups and traditional leaders. Don't wait for them to volunteer.

Acknowledge the validity of the private groups' particular interests and concerns. Don't force them to adopt all of the government's values or orientation.

When possible, provide technical support to these groups in areas such as up-dating medical facts about AIDS, counseling, and access to media.

Monitor group activities to ensure they are on target and accurate.

Recognize group efforts privately and publicly, perhaps with awards or press reports on their success.

TODAY AND TOMORROW: TOWARD EFFECTIVE PREVENTION

In Africa, as in much of the world today, there exists a complex mixture of fact, fiction, and fear about AIDS. For example:

In Uganda, recent studies suggest that the basic facts about AIDS are well understood by up to 95% of the rural population. Yet qualitative research in other countries is showing that some adolescents feel “you can’t get AIDS if you have sex in the rural areas because AIDS is an urban disease” or that “if you don’t visit prostitutes you’re safe.”

These reactions are suggestive of how fact can be transformed into fiction: as people experience fear, they also seek to deny their own risks – looking for easy answers to a frightening new reality.

There is a more disturbing, but not surprising, revelation about the focus on information: clear gains in basic information do not result in behavior change.

We must now act on the knowledge that a correct understanding of HIV infection is like correct information about other lifestyle diseases (cancer, heart disease, other sexually transmitted diseases, etc.). Knowledge alone is insufficient to ensure that most people will make the difficult changes in routine behavior that can ultimately protect them from infection.

Information is simply not enough for prevention; yet too many of our programs continue to pursue communication strategies aimed primarily at improving knowledge alone.

What is needed now? What role can modern communication play in helping to move:

beyond denial,

beyond information alone,

toward programs of effective prevention?

Learning About Behavior

In Africa, just as everywhere else, AIDS is a disease that can be prevented. The HIV virus survives and spreads because people engage unknowingly or unavoidably in a narrow set of specific behaviors that can have lethal consequences. It is well recognized by epidemiologists and health educators alike that the AIDS problem is clearly a problem of behavior change and that our next generation of programs must focus on specific behavior.

It is generally agreed by behavioral psychologists that there are at least five ways to influence human behavior. In a sense, this means that we have five broad strategies to pursue. In the Age of Prevention we can:

- use authority and legal sanction to prohibit certain behaviors;**
- provide facts and logic to inform people of the dangers of specific behaviors and the advantages of specific new behaviors;**
- use emotion to appeal to people's sentiments;**
- create incentives (such as monetary rewards, recognition, or new societal norms) to support specific behaviors and/or reduce others;**
- use facilitation strategies to identify and reduce the specific obstacles which inhibit people from adopting a new and more healthy behavior.**

Some HIV-related health behaviors are quite straightforward, requiring only one of the above techniques. Some governments, for example, have already banned the commercialization of blood, enormously reducing the risk of contaminated blood supplies.

By comparison, HIV-related health behaviors that are private and personal are:

- infinitely more complex;**
- less well understood;**
- certainly much less constrainable by public sanctions.**

While several personal and private behaviors are important, attention in Africa is being focused largely on sexual transmission of HIV. Certainly sexual transmission represents the area in which the challenge to communication to educate and motivate is the greatest. Sexual behavior is:

- ubiquitous;**
- highly conditioned by tradition, yet particularly private;**
- apparently responsible for one of the dominant routes of HIV transmission;**
- usually a taboo subject for discussion.**

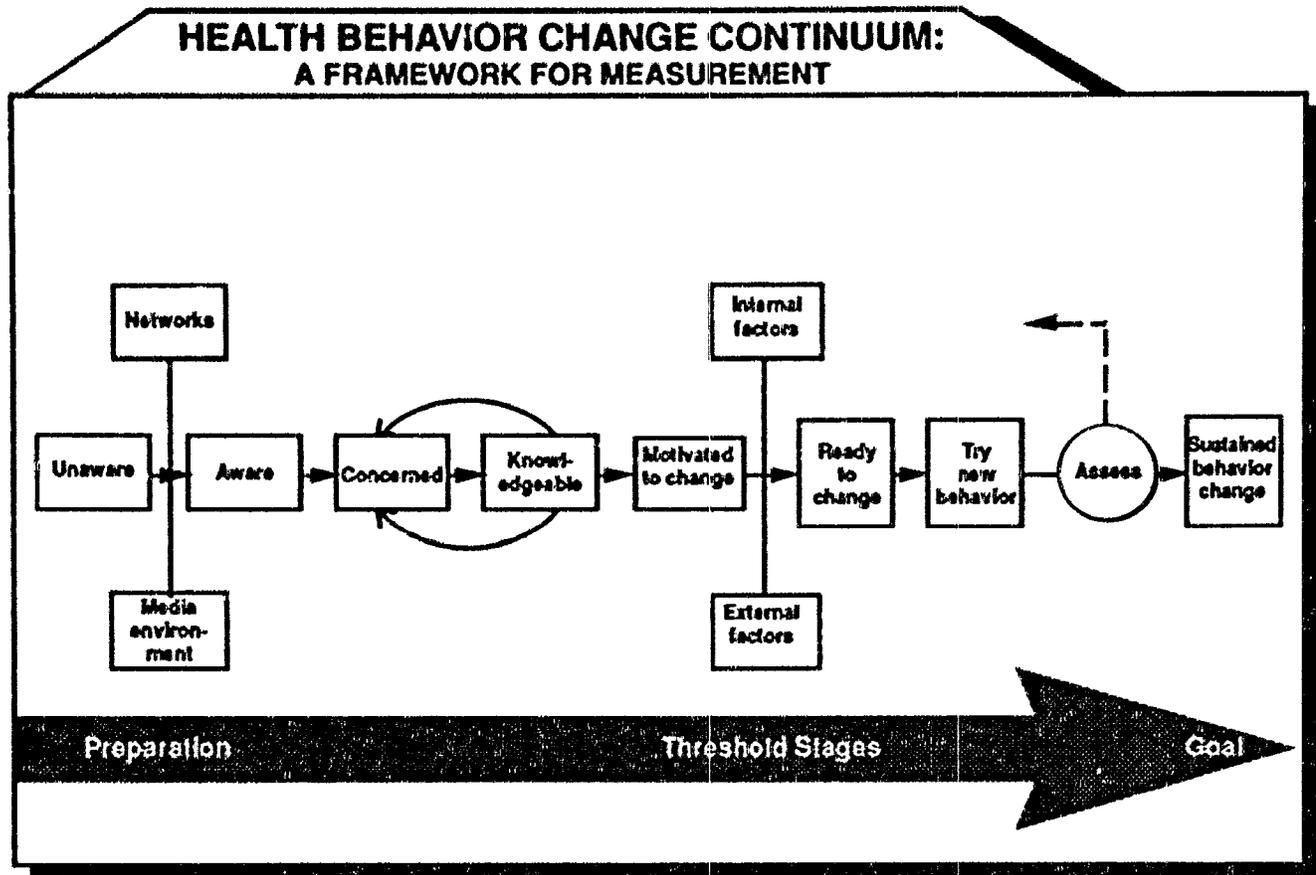
Control of sexual behavior – or change in commonly accepted practices – often strike at the heart of self-identity and community norms. Sexuality is an area of human behavior poorly studied and poorly understood. We need to pay increased attention to:

- the incidence of sexually transmitted diseases;**
- their relationship to HIV status.**

The format for behavior change for AIDS prevention is not yet well understood; however, the means of influencing behavior are better understood today than at any other time in human history. We know enough about AIDS to begin with a hypothetical framework for change.

Figure 6-4 lists several stages through which an individual might move as he or she goes from unawareness of the problem of AIDS to sustained behavior change.

FIGURE 6-4

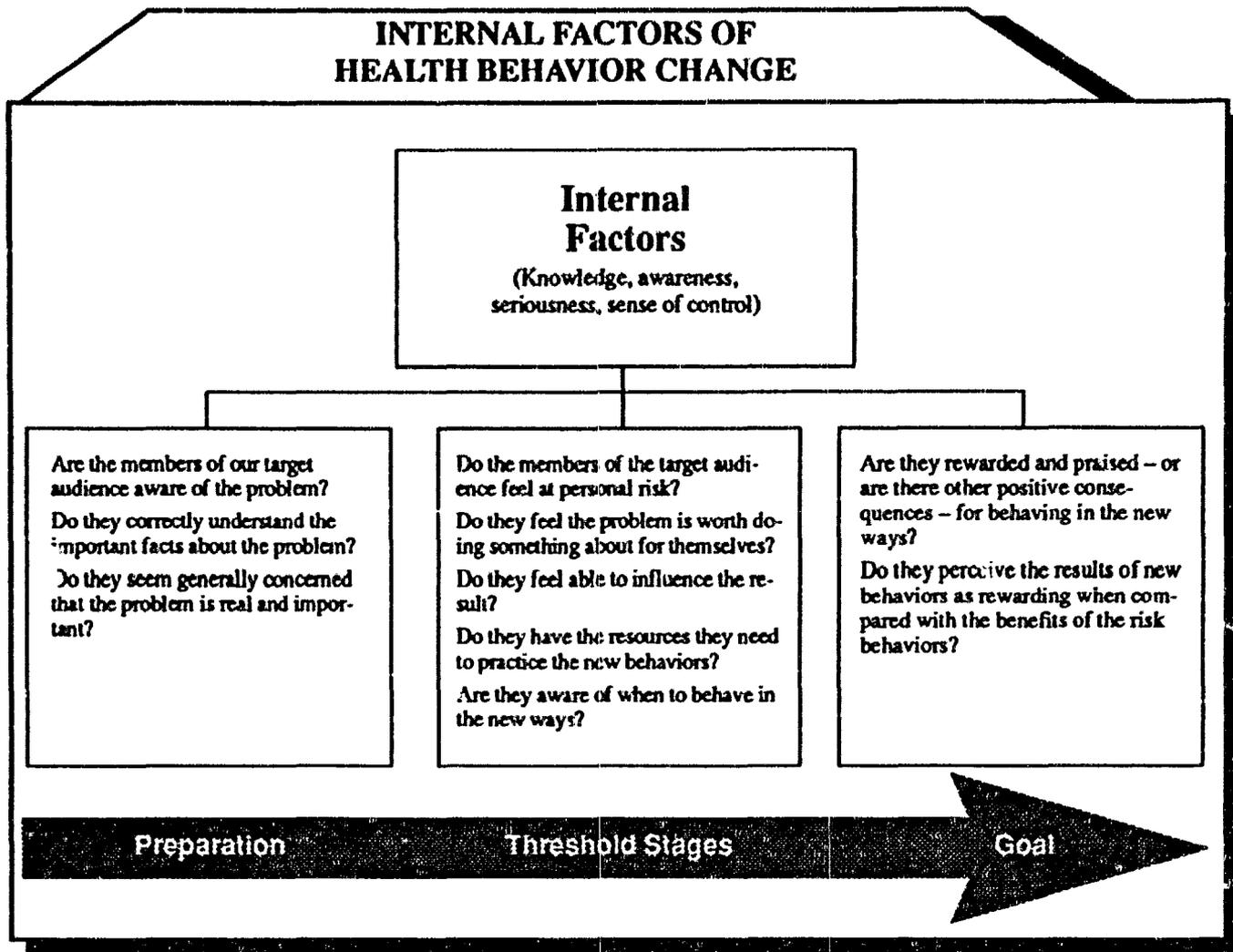


This model assumes that a person eventually moves through stages which sometimes vary in sequence but, when taken together, can help explain and influence behavior change. These stages include:

- lack of awareness of the problem;
- awareness about the problem;
- concern about the problem;
- knowledge about the problem and how to prevent it;
- motivation to change behaviors that make one susceptible to the problem;
- readiness to change specific behaviors;
- first trial of new behaviors;
- personal assessment of the results of adopting new behaviors;
- sustained behavior change itself.

If we accept the model in Figure 6-4 as an initial framework for behavior change, then communication strategies for an Age of Prevention seem best suited to address the internal factors that influence adoption.

FIGURE 6-5



For example, strategies can help to answer certain questions, as shown in Figure 6-5.

Techniques for Behavior Change

As governments move beyond denial and beyond information, three activities stand out as program priorities for this Age of Prevention. We must:

- learn more about risk behaviors;
- continue to foster broad societal support for key new behaviors;
- target and integrate serial strategies on a relatively narrow set of priority behaviors.

Upon accepting these three activities, we acknowledge that behavior change is the problem. Therefore, as communicators we must first learn more about the behaviors that place populations at risk. We must:

- know what people do now;
- know how people feel about their present practices;
- understand whether people feel it is possible to change their behaviors.

For example, we need to know and understand if people feel confident that they could use condoms or practice “safer” sex. And if not, why not? As we examine examples, it becomes clear

that we must ask ourselves: how do we go about studying these very private feelings and practices?

From the fields of anthropology, marketing, and social psychology, communicators are exploring qualitative methods of inquiry. These methods are used to:

closely examine knowledge, attitudes, and practices of small segments of target audiences;

complement traditional forms of large-scale and more representative survey research.

While in-depth description of qualitative methods is beyond the scope of this chapter, it may be useful to give examples of how each technique might be applied to specific AIDS prevention objectives in order to learn more about the behavior of populations at risk:

Intercept interviews might be used at the exit of a clinic to find out what information health workers had given patients during their visits.

Observation could be used at a bar to learn about the interaction between a client and a prostitute prior to a sexual encounter, or to examine condom purchasing patterns of customers in small stores.

Role-playing exercises might be used to learn about how sexual partners handle the concept of using a condom during intercourse. Simulation exercises might be used to learn about skill levels in the use of condoms.

Ethnographies could be used to study the broad context of sexual practices and identify alternative behaviors, particularly within communities with high HIV infection rates.

In-depth interviews could be used to understand how specific high-risk groups, such as female prostitutes, view the sexual practices which expose them to HIV infection.

Focus group discussions might be used with transport workers to discover how peer networks could be used more effectively to influence the use of condoms.

Panel studies might be used with employees of a large company to determine whether and how their condom use practices change over a long period of time.

When combined with data collected in well-developed surveys, information gathered by qualitative methods can be vital to:

understanding community attitudes regarding HIV transmission;

selecting specific communication channels;

organizing interpersonal networks to influence and shape behavior.

The triangulation, or combining of various qualitative and quantitative data collection techniques, allows us to develop a more in-depth understanding of these very private attitudes, beliefs, and behaviors. It constitutes the first scientific step towards an Age of Prevention.

BUILDING SOCIETAL SUPPORT

For the Age of Prevention to really take hold, communication must also help build a societal consensus – a public code of ethics – that performing these new behaviors is the “right” way to behave. In order for most people to adopt new behaviors and maintain them, it is imperative that public opinion support the new behaviors.

Behavioral scientists understand that an important influence on individual behavior adoption is what is termed “societal norms.” Behavior is:

- not performed in a vacuum;
- performed within the context of a community;
- performed with the support of a person’s sexual partners, peers, family, and other influential associates.

One role for communication is to identify and then influence the community to sanction new practices.

The theoretical basis for building societal support is well established in the social science literature. Fishbein, a leading theorist of behavior change in the United States, states that the principle determinants of intentions include:

- the individual’s attitude toward performing the behavior;
- the social influences or “subjective norms” which influence the individual to perform or not perform the behavior.

Fishbein and his colleagues demonstrate that social influences, or “subjective norms,” reflect an individual’s perception of whether or not they should be influenced by what society believes is correct. For example, if people believe that their peers as well as their family support having only one sexual partner – and the opinion of their peers and family is important to them – they will be more motivated to remain monogamous than they might be if the reverse were true. The key is the perceived relevance of the individual or group approving or disapproving of the behavior.

In Africa, it is very clear that AIDS is a family disease, with multiple family impacts:

It has impact on the individual in the context of his or her role in a nuclear and extended family network.

Doctors in Africa today are reluctant to tell patients their blood test results because of the impact the news of a positive HIV blood test will have on the individual within the family structure.

Having AIDS means that a woman may face the impact of abandonment or divorce; in addition, both the woman and her husband might wish to avoid having children – creating ridicule and disappointment from in-laws, grandparents, and other family members.

Another reality for Africa is the combination of traditional male dominance and an increasing female population which is economically independent. This combination appears to make sexual

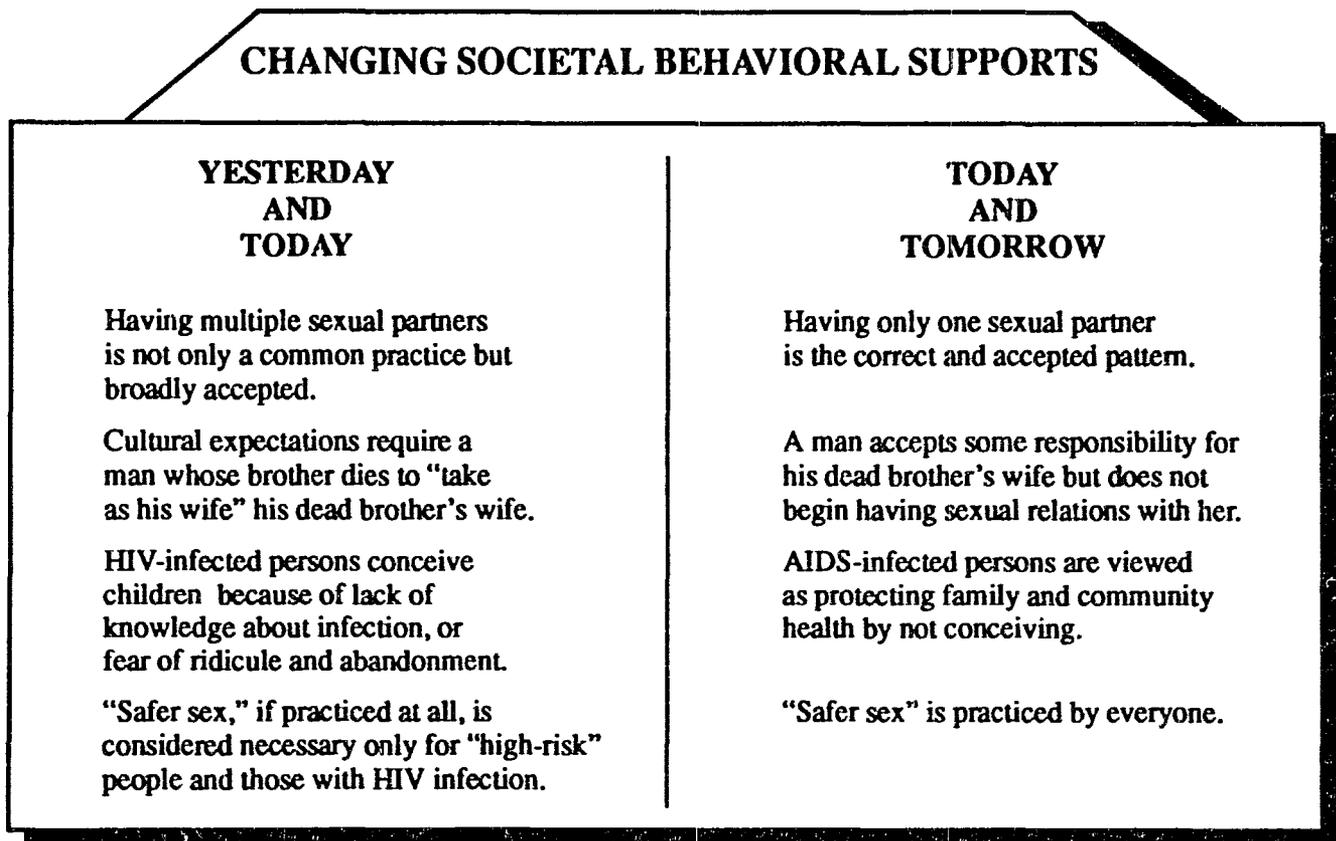
relations outside of marriage more acceptable; it also means that the habit among married and single persons of moving from partner to partner may be part of permissible behavior within society.

For new behaviors (like safer sex) and new cultural values (like not having children and not abandoning HIV-positive partners) to exist and flourish, a societal climate will have to be developed that:

- embraces and protects these new behaviors;
- understands that safer sex must be practiced by everyone, not only by those persons who are exhibiting symptoms of AIDS but also by those who are healthy.

Societal support for new behaviors means that some of the attitudes and practices of yesterday must give way to new attitudes and practices in the Age of Prevention. This process is illustrated in Figure 6-6:

FIGURE 6-6



The role of the communicator is to:

- find ways to encourage AIDS prevention as part of daily life;
- raise public consciousness so that people think about AIDS prevention as an issue for their neighbors and for society;
- raise individual consciousness so that people think about AIDS prevention as an issue that has impact on their personal behavior.

This means the communicators must become masters of public relations. For example:

They must encourage radio and television producers to develop programs such as soap operas about AIDS.

They must suggest that dramatic productions be undertaken by local drama groups.

They must encourage producers to sponsor talk-shows, and they must hold workshops for local leaders to discuss the way traditional practices influence AIDS-related behaviors.

BEYOND PIECEMEAL PROGRAMS: INTEGRATING AND TARGETING

Yesterday's Efforts

Health education as traditionally practiced often suffered from a lack of comprehensive planning. Too often we have pushed ill-conceived messages through weak communication channels toward inappropriate audiences.

Even more often, we have employed education methods which, while effective in teaching individuals, have minimal impact upon the health status of large populations.

This approach to health education led to public health programs consisting of media promotions, training programs, and community events. These may have appeared on the surface to be successful, yet they failed to bring about sustained change in health-related practices.

Flawed programs in the past have included:

lectures on community participation for health workers who were too overworked to teach clients or organize community groups;

a few slick TV spots, which pleased the government officials but provided little practical information to consumers;

radio programs that advertised services that did not really exist or gave advice no one was inclined to follow;

a poster meant to reach women who were new to urban settings, which was pretested with one neighborhood mother because "she's from a rural area";

a flip chart developed for group presentations that never took place because the health workers were never instructed on how to use it – or there was no money for participants to travel – or the flip chart got lost on its way to the health workers.

The flaws in such efforts are not always easy to see because they are often strategic flaws:

Program managers may have made inaccurate generalizations about the audience (its current practices, its needs, its preferences, or access to media).

Planning of media activities may have been insufficient to assure

messages reached an adequate number of people with necessary impact.

Training of health workers may have been lacking because of resource constraints.

There may have been little or no program monitoring or midcourse adjustments.

Moreover, health education has often been at the bottom of public health allocations, in terms of both human and financial resources. This is especially critical in developing countries where budgets are stretched thin. Lack of resources easily results in piecemeal strategies.

Today's Approach

The key to success in communication has been a shift away from media-specific planning toward a systems approach to communication. A systems approach:

- uses a combination of broadcast, folk, and community media;
- considers a combination of media as part of an interrelated network of inputs;
- targets inputs to specific changes;
- is responsive to specific audiences.

An effective communication program must also be concerned with

feelings, incentives, obstacles, and the ways these can be manipulated through messages to help people make lasting changes in unsafe behaviors.

Tomorrow's Promise

A new generation of communication programs is now on the drawing-board. Short-lived campaigns are giving way to long-term systematic programs of behavior change and social support. **Instructional media, social marketing, and behavioral psychology** are expanding our ability to use communication in support of development. Examples include:

Risk Behavior Counseling. Communication strategies can support proven counseling techniques to reach individuals who know about AIDS and who perhaps are HIV-infected or are involved with a seropositive partner, but who have not yet adopted safer practices. Risk behavior counseling uses structured group, individual, or couples counseling techniques aimed at replacing unsafe practices with safer ones that are also satisfying. The goal of this type of counseling is to desensitize taboo topics and make safer behavior free from either guilt or worry. One emphasis of this approach has been skill practice sessions with condoms; another is group discussion of safer sex practices.

Communication strategies are needed so that potential clients can be informed of available services. Audio-visual aids can be produced for counselors to use during sessions, and take-home materials can be produced for clients to reinforce important messages discussed during the counseling session. Special care must be taken with communication products developed to support these programs. The explicit nature of the counseling often makes it difficult for governments to

promote counseling; the concept that sex should be publicly promoted as satisfying or recreational is still controversial in many societies; the public may not understand the need to promote condom use or the safer sex practices required to prevent HIV infection.

Product Marketing Programs for specific products, such as condoms and spermicides, have assumed significant importance in the fight against AIDS. In many countries of Africa condom availability is low, and condoms are often associated with promiscuity or population control. AIDS has created a growing realization, however, that condoms are also a means of protection. Condom marketing strategies use commercial marketing techniques to promote commercial, subsidized, or even free distribution of condoms for AIDS prevention. The communication components of condom marketing strategies do not attempt to teach everything about AIDS; rather they emphasize the specific benefits of using a condom. They use mass media for advertising, and some place special attention on the condom design itself (lubricated, with or without spermicide), packaging, distribution outlets, point of purchase information, and pricing to maximize sales profits and distribution.

There are legitimate concerns about condom marketing, however. These are outlined in Figure 6-7:

FIGURE 6-7

CONDOM CONCERNS

CONDOM MARKETING ALONE DOES NOT PROVIDE SUFFICIENT GENERAL EDUCATION

ABOUT AIDS. Marketing strategies must be combined with information strategies with the goal of providing sufficient motivation for the public to want to use condoms. The marketing component must ensure that, once the motivation has been created, the product is available and easy to obtain at a reasonable cost, and that information is also available about how the product should be used.

EASY ACCESS TO CONDOMS MAY GIVE A FALSE SENSE OF SECURITY TO USERS and increase the likelihood that people will continue to have more than one sexual partner. Communication strategies should not suggest that condoms are 100 percent effective, nor that using a condom is the only way to prevent HIV transmission. Alternative "safer sex" practices, and the need to reduce the number of sexual partners, should be promoted along with condom use.

CONDOMS REQUIRE EXPLICIT INSTRUCTIONS to ensure that they are used properly. Such instructions require cultural sensitivity, but are not out of the realm of the communication specialist who has studied the information needs of the target population.

IN MANY COUNTRIES, CONDOMS ARE NOT THE ANSWER. Some countries have determined that the need for condoms would be so great that, given increased demand, it would be impossible to maintain adequate supplies. In Uganda, for example, two million condoms are not enough for one-third of the adult population to have one sexual encounter!

Service-Delivery Education Programs (treatment facilities, testing, information/referral, patient and family counseling) are not communication activities in themselves. However, like the other two strategies, these require communication elements to publicize and create responsible demand for the services. Service-delivery education programs have sometimes been parts of national information campaigns, but the message was simply to announce the service, publicizing where and when it was available. In a service-delivery education program, emphasis must also be placed

on training caretakers (physicians, nurses, hospital and clinic personnel, mental health and social service providers) in communication skills, HIV risk reduction, and counseling techniques. Specific activities include:

- skills training in patient counseling;
- development and use of audio-visual aids for providers;
- development and use of printed materials to give patients to take home after the counseling session;
- development of patient and family outreach services;
- publicity about service alternatives and availability;
- one-to-one education regarding HIV risk reduction.

Given the problems of limited resources and difficult-to-change behaviors, we must find ways of increasing the likelihood that our communication strategies will not only inform, but will also create sustained behavior change. Communication strategies which support other targeted programs, such as those described above, have the potential to stretch these limited resources to impact beyond the mere transmission of information to prevention of the further spread of HIV infection.

TEN KEYS TO EFFECTIVE COMMUNICATION FOR AIDS PREVENTION

Whatever strategy is chosen, effective communication for an Age of Prevention should include the following steps:

1. Define the Persons Practicing High-Risk Behaviors.

These persons are audiences for your messages. Depending on the particular strategy you select, your audience could be one or all of the following: the sexually active population, school children, or persons practicing particular high risk behaviors. However, each separate target group will require a completely different communication approach; segmenting your audience before you begin will help to ensure that your messages and strategies will affect those you are trying to reach.

2. Determine the Existing Levels of Knowledge, Attitudes, and Types of High-Risk Behaviors Within your Target Groups.

Using different research techniques to learn about your target audience will help you to:

- understand what correct and incorrect information they already have;
- how they behave;
- what their motivations might be to maintain or change their behaviors;
- how you might influence them through your program.

This step is of primary importance for developing ideas about the directions of your communication strategy.

3. Specifically Define What Behaviors Must Be Changed.

What information needs to be transmitted, and what attitudes require changing, in order for people to protect themselves? This is the crucial step of strategy development.

4. Determine the Relative Benefits of Each Behavior.

Which behaviors are currently practiced as compared to those you will be promoting? View these as though they were products competing for the individual's attention. If you can convince your target audience that the new behavior is an "improvement" over the current behavior, the motivation to try the new behavior might be instilled.

5. Select the Benefits of the Correct Behavior.

Which benefits are most competitive in the minds of those most at risk? This step requires an in-depth understanding of what motivates your target audience. Is your audience most concerned about:

protecting themselves ("Using a condom will protect you from infection.");

protecting their partners ("Using a condom will convince your partner that you care about him/her.");

protecting their families ("Using a condom will help ensure that you are able to continue to support your children as they grow up.").

6. Craft Messages and Appeals that Highlight Specific Benefits.

Make sure that there is consistency across all of your messages and materials, including those as diverse as health worker training materials, condom point-of-purchase displays, and promotional spots for risk behavior counseling.

7. Pretest Messages and Appeals Through Focus Groups and In-Depth Interviews.

Try to learn whether the members of your audience understand, believe, and are motivated by the messages. Since pretesting usually uncovers inconsistencies and problems with the messages, ask yourself and members of the target audience these questions:

Do the visual images in the materials support the words?

Do the images represent people, places, or products with which the audience is familiar?

How can the messages be changed to improve the likelihood that they will influence behavior change?

8. Select Channels that Most Persuasively Reach the Audiences At Risk.

Your earlier research should have included questions about exposure to communication channels and sources of influence:

Are authority figures (such as physicians) appropriate, or are peers (school children, other prostitutes, etc.) better sources of information for your target audience?

Does your target audience listen to the radio?

Would they prefer to be given leaflets or fliers by someone directly (like a bar owner or a religious leader)?

9. Organize the Effective Delivery of the Messages Through the Selected Channels.

Just selecting the channels is not enough. What specific times on the radio are more effective than others for different target audiences? (Farmers may listen in the morning before they go out to the fields, prostitutes as they do chores around the house in the afternoon, factory workers at home after dinner in the evenings.)

Has the frequency of the spots been carefully thought out to achieve a certain level of intensity, while avoiding “listener burnout”?

Which page of the newspaper and which edition are most read by your target audience?

What is the “language” of your target audience?

Do your health workers or counselors require a training session?

Where must point-of-purchase materials be delivered – to the warehouse depot or directly to the retail sales outlet?

10. Monitor the Delivery for Mistakes and Unexpected Changes in the Audience.

Are radio spots being played at the right time and at the right frequency?

Are newspaper articles giving correct information? Are point-of-purchase materials displayed?

Are counselors giving take-home materials to their clients? Is the audience interpreting the messages correctly?

Have your audience members reached a point of saturation with information, but do they still feel unable to perform the behaviors you are promoting?

These ten steps are now well accepted by communication professionals in Africa as vital for producing communication that changes attitudes and behaviors. This process has proven effective in programs on family planning, heart-disease prevention, child survival, drug and alcohol abuse, sexually transmitted diseases, and now AIDS prevention. Communication is flexible and fluid; it can change, grow, develop, and continue to influence throughout this process. The challenge is to utilize limited resources in a way which informs, motivates, and sustains the behaviors that are most crucial to AIDS prevention programs.

CONCLUSION

For an Age of Prevention strategy to be successful, three principles of communication should be kept in mind:

1. PUT THE AUDIENCE FIRST.

The audience (farmer, mother, young couple, or prostitute) is not a receptacle into which new technologies are poured. Rather, the audience is an active catalyst whose needs, constraints, attitudes, and vocabulary orient and drive the communication component. Communication is not a link to the audience, but is rather a two-way link between the audience and planner.

Our tools for understanding the audience's perspective are growing. Our dependence on large-scale surveys and anecdotal information is lessened by smaller, behaviorally oriented studies. Concept testing, ethnographies, focus-group interviews, behavioral trials, and intercept interviews are the jargon of a new genre of research techniques. These behavioral studies help identify the hidden constraints an individual may encounter in trying a new health behavior, and expose the less visible incentives which promote adoption. These studies help message designers select vocabulary that the audience will understand and integrate the new behavior into the audience's own view of problems and needs. These studies help us to ask not only "how good is the new idea?" but, for example, "how good will the father, mother, or couple think the new idea is?"

A second major lesson about audiences is that all users are not alike. Early mass media broadcasts tended to lump people together, focusing more on their similarities than their differences. Now we segment audiences and direct programs toward specific groups. We develop differentiated message strategies for different audience groups and use techniques such as message tone, characterization, and scheduling to reach important subgroups with more relevant and persuasive information.

2. TARGET BEHAVIOR.

Traditionally, we have thought of communication as a means to "motivate" people through information. But today, we cannot be satisfied with changes in knowledge and attitude alone. Better health means behavior change. It means understanding what benefits individuals will experience and value from a new practice; how individuals will relate the new behavior to existing practices; and whether they will see the cost (time, money, effort) as too high. We must select behaviors that people are willing and able to change.

Effective behavior change also means targeting areas of opportunity rather than trying to do everything at once. People do not change behavior easily. We know that for a new behavior to become routine, people need to perform it many times, to receive support from several places, and to have the support (or reward) linked as closely to the new behavior as possible. We believe effective communication cannot promote "better health" as such, but it can prioritize the elements of better health such as safer sex and focus on specific micro-behaviors related to safer sex: using condoms or having non-penetrative sex or staying with one partner. This permits communication to help the user deal with real-life problems as they arise. We believe communication is more effective when it is targeted at specific behaviors that people are likely to adopt.

3. INTEGRATE STRATEGIES.

No single strategy or channel is diverse enough to reach every element of a population convincingly. Dozens of studies were carried out in the 1950s and 1960s to determine which was better – radio, TV, print, or face-to-face counseling. The answer is now clear that “which is better?” was the wrong question. The right question is “which combination of channels is best for what purpose?” Interpersonal communication, including counseling, group meetings, community organization, and practical demonstration, are clearly the best way to teach skills, develop confidence, and support sustained behavior change. Broadcast media are effective at reaching mass audiences quickly with fairly simple ideas, and for giving support to or reinforcing face-to-face efforts. Print media are best at providing timely reminders of information we expect people to remember over time.

Perhaps our most important finding is that we need all of the components discussed in this chapter to make an effective program. We need to reach large numbers of people quickly, these people need some reminders of key information, and they need to believe in the messages if new routine behavior is expected.

COMPETENCY-BASED TRAINING FOR AIDS PROGRAMS

7

John Rich
Leopold Zekeng

INTRODUCTION

This chapter explores the relationship between an assignment and the kind of training needed to ensure optimum performance of that assignment. The aim of training must be to assist workers to perform their jobs competently. No matter how effective training is in conveying information, influencing attitudes and judgment, or stimulating thought, it will have failed if trainees are unable to perform the tasks assigned to them. This is the ultimate test of training: Can workers perform their tasks?

Competency-based training (CBT) is training for action. The objective is to equip trainees with certain competencies which will subsequently be applied in order to accomplish specific tasks.

CBT is especially relevant to health care. It is commonplace in many countries to find highly educated, and often erudite, health care providers who encounter great difficulty in the application of what they have learned to the solution of health problems that confront them. In a number of cases, these individuals lack the organizational, technical, and managerial skills that would enable them to take full advantage of their education. For example:

Doctors newly graduated from medical school often find themselves ill-equipped for the practice of medicine in rural health centers which do not have the material or human resources they were accustomed to using at the teaching hospital.

Nurses trained in hospital care can find themselves in sole charge of rural clinics and dispensaries, often with the responsibility for diagnosing common ailments.

In both examples, medical and nursing education programs failed to prepare health care personnel for the assignments they were later given. It is often only by an arduous and sometimes costly process of trial and error that persons in such situations can learn to perform their designated functions effectively.

In addition, the training offered many support and paraprofessional staff in health care settings is based upon erroneous assumptions. For example:

It might be assumed that knowledge of the anatomy and physiology of the circulatory system is an essential prerequisite for the control of hemorrhage by first-aid workers. Accordingly, lectures by an expert physician on the subject may be arranged. However, it is by no means certain that the knowledge gained as a result of those lectures will ensure that first-aid workers will be able to quickly and effectively control bleeding in an injured person. Control of hemorrhage depends primarily on the prompt and effective performance of certain actions, rather than the possession of certain knowledge. The first-aid worker who knows what to do, and how to do it, and who has practiced until the actions have become second nature, will be successful in controlling bleeding.

If knowledge does not contribute to the enhancement of skill, it has no place in CBT. If training does not result in good performance, then it has failed to reach its mark. The measure of training effectiveness is the degree to which workers can perform the tasks assigned to them—not the degree of knowledge they have gained.

The first section of this chapter expands upon our training definition and explains the characteristics of CBT; the second section poses the question: what is the role of CBT in AIDS prevention? The answer lies in consideration of which interventions are needed in order to prevent AIDS. CBT emphasizes doing rather than merely knowing, and the prevention opportunities explored in this chapter suggest where CBT can be used to effectively intervene.

PRINCIPLES AND CHARACTERISTICS OF COMPETENCY-BASED TRAINING

Competency-based training is distinct from other kinds of educational processes. It focuses on the functions to be performed by a given worker and the development of the competencies required for performance of those functions. Traditional forms of instruction, on the other hand, attempt to “educate” the worker by providing a broad array of knowledge from which the worker can later extrapolate, according to the needs of a given situation.

Unlike the academic model, CBT provides the worker with those competencies essential for performance of the assigned job. While traditional forms of training place great value on evaluation of what information the trainee has learned, CBT places its emphasis on evaluation of how the trainee performs.

Competencies

This does not mean, however, that the acquisition of knowledge has no place in CBT. Three types of competency are recognized: cognitive, psychomotor, and affective. Stripping these terms of their mystique, they translate as knowledge, skills, and attitudes.

The effective performance of skills obviously implies a certain degree of knowledge. A laboratory technician could, for example, be adept at manipulating specimens, equipment and instruments, but if knowledge of the assay protocol is lacking, performance of a test would be impossible.

Similarly, possession of knowledge without the ability to perform skills would also lead to ineffective performance. There is a world of difference between knowing the steps in a procedure and being able to perform that procedure safely and precisely.

Quality performance is dependent on skills backed up by essential knowledge; however, performance will be compromised in the presence of an inappropriate attitude. An attitude characterized by a lack of concern would obviously affect the precision with which a laboratory technician performed a given assay; such an attitude could easily lead to false results.

The demarcation between knowledge, skills, and attitudes is somewhat arbitrary and artificial. Competencies in any of the three domains are interdependent. For example, the skills needed by a laboratory technician include reasoning, observation, calculation, and interpretation—in addition to the more obvious motor skills involved in manipulation of specimens and equipment.

In many training programs, the acquisition of knowledge takes precedence; in CBT, performance is the focus of attention.

Defining the Job

Since CBT is concerned with assisting personnel to perform the functions to which they are assigned, it follows that the first consideration in setting up a training program is to define those functions accurately and in detail. This is a somewhat arduous and time-consuming task, but in the long run it pays handsome dividends.

Defining a job consists of “task analysis,” which is analyzing the tasks to be performed by a given worker. Task analysis is an ordered listing of the functions, activities, and discrete actions that a worker has to perform in order to do a specific job. It is, in fact, a very detailed “job description” which explains, step by step, exactly what the worker is expected to do. During this analysis:

task-related functions are identified;

these functions are broken down into the activities necessary for task accomplishment;

those actions required for performance of specified activities are determined.

Evaluating Performance

If a job is not defined in sufficient detail, there is little basis for an objective evaluation of performance. In such a case, supervisors will revert to subjective forms of evaluation based on impressions, feelings, convictions, or even hearsay. Assessment will often be heavily colored by the supervisor’s personal like or dislike of the persons being evaluated.

Task analysis provides a basis for objective evaluation:

It informs the worker of what he or she is expected to do and exactly how to do it.

Subsequent evaluation can therefore be based on whether or not the worker does what is expected in the manner prescribed.

Subjective influences, and the biases they produce, are thus reduced to a minimum.

Identifying Training Needs

Task analysis also provides the basis for the identification of training needs. The detailed breakdown of tasks provides a view of what ideal performance should be. It is then relatively easy to compare ideal performance of these tasks with their actual performance. The discrepancy between ideal and actual performance establishes the baseline for determination of training needs. This baseline is arrived at by defining:

- skills that are lacking or defective;
- knowledge that health care providers need in order to perform those skills;
- attitudes that affect proper skill performance.

Diagnosing Performance Discrepancies

Once performance has been evaluated and discrepancies identified, decisions have to be made on whether discrepancies are due to:

- lack of knowledge;
- lack of skill;
- lack of supervision;
- lack of equipment or supplies;
- inappropriate attitudes.

However, once discrepancies are identified no useful purpose will be served by:

- supplying the health worker with knowledge if what he or she really needs is training and practice in a particular skill;
- training a health care provider in skills or knowledge if what is really missing is equipment or supplies.

In addition, it is of little useful purpose to provide training at all, if subsequently the health care provider is to be left to his or her own devices, without supervision. Under such circumstances if skills and knowledge do not atrophy, attitudes will almost certainly deteriorate. The causes of discrepancies in performance must be diagnosed, and then decisions made on whether training is really the answer to the problem.

Developing Learning Objectives

Once training needs have been identified, it is possible to identify clusters of skills, related knowledge and attitudes. From these, topics can be determined which need to be addressed during training. For example: if discrepancies were noted between prescribed precautions and actual performance at various points in different procedures, a section of training could be devoted to precautions.

Once the topics of training have been determined, it is necessary to develop learning/training objectives. These are simply statements of what trainees should be able to do at the end of a training session. These statements:

- provide information on the trainer's intention;
- form the basis for the evaluation of trainees and trainer alike.

In order to be of any utility, objectives must be measurable or observable. A poor objective might read as follows:

By the end of this session, the trainee will know and understand the three typical patterns of AIDS epidemiology and the regions in which they occur.

On the basis of such an objective, a trainer would have difficulty in ascertaining what the trainee really did know and understand, since a person's knowledge and understanding are invisible! A trainee's understanding and knowing can only become evident as a result of some overt action.

A better objective might be,

By the end of this session, the trainee will correctly describe the three typical patterns of AIDS epidemiology and will be able to indicate correctly on a map of the world those regions in which each occurs.

Yet another poor learning objective would be,

By the end of this session, the trainee should know how to reconstitute reagents used in the test correctly.

A better version of this objective would be,

By the end of this session, the trainee will be able to measure the correct amounts of reconstituting solution and add them to the appropriate vials, according to the manufacturer's recommendations.

The advantages of precise learning objectives are that they:

- state unequivocally what the trainer will teach;
- reveal what the trainee must learn;
- indicate how the trainee will be evaluated.

THE TRAINER'S RESPONSIBILITY

One aspect of CBT that must be stressed is the responsibility it places on the trainer for achievement of learning objectives. (Traditionally, it is the student's fault and not the teacher's if the student fails to learn.)

In CBT, if a trainee fails to learn, it is considered to be predominantly the fault of the trainer and not solely that of the trainee. If trainees fail to achieve learning objectives set for them, it is

argued that the trainer has failed to provide the environment and the conditions in which the trainee can achieve them.

For example, if a trainee's attention wanders in the course of a lecture, this is considered to be the fault of the lecturer and not of the listener. The lecturer has failed to stimulate and maintain the listener's interest. If, at the end of a practical session, the trainee is still unable to perform a procedure correctly, this is considered to be a failure of the trainer to provide the conditions in which the trainee can practice the procedure adequately.

The Trainer's Role in Active Learning

In active learning, the trainer has the ultimate responsibility for the trainee's learning. The trainer must employ training methods which will involve the trainee in the process of learning, and ensure the trainee's maximum participation in that process. Learning must be active, rather than passive. The trainer's role is not merely to dispense information but to assist trainees to learn through personal discovery. Instead of passively assimilating information delivered by the trainer, the trainee must be stimulated to contribute what he or she knows, thinks, and feels to an exploration of the topic.

The trainer's role is to facilitate learning, to channel information, opinions, and ideas coming from trainees, and guide them toward the discovery of new knowledge and the acquisition of new or improved skills. In addition, the trainer seeks to influence trainees' attitudes, often by acting as a role model.

Selection of Learning Activities

From the above, it is obvious that the trainer must give careful thought to the learning activities that are proposed to trainees. These trainees are adults, with a wealth of personal and professional experience. They must be allowed to use this experience in the course of training sessions and share it with their peers. One of the best ways of facilitating this is by the organization of structured group activities, during which each member of the group is encouraged to make his or her contribution.

Conceptual, analytical, and organizational skills are often best learned and practiced in small group activities, at the end of which a tangible product is expected. These products are then submitted to peer scrutiny and comment in plenary sessions. If the products are favorably reviewed, they may be included in a final product.

It has been found that one of the best ways to impart information is by means of an active lecture. This differs from the traditional lecture format in that the trainee becomes directly involved at each step of the way:

The trainer elicits information from the trainees themselves by adroit questioning, probing the extent of their knowledge, correcting misconceptions, and providing additional information when necessary. In this manner, trainees actively contribute to the learning process, exploring a given domain together with the trainer.

As a result, acquired information is more easily internalized and its implications recognized at a personal level. As individuals, and as a group, trainees tend to identify more closely with knowledge gained through this kind of interaction. Each person is conscious of the contribution he or she has made to the final mosaic and can experience satisfaction in having advanced the learning process.

However, the trainee also needs the challenge of individual assignments and exercises involving personal application of competencies, including problem-solving skills. The individual assignment obliges trainees to grapple alone with development of particular skills, returning to the peer group and the trainer for assessment of their accomplishments. Two representative examples of individual assignments are presented below:

The return demonstration can occur once a new skill has been demonstrated by the trainer. Each trainee is then given the opportunity to demonstrate the skill. As he or she does so, errors committed can be identified and corrected.

Simulations are useful in situations in which it is not feasible to practice newly learned competencies. These can take the form of role play in some instances. They can also involve the use of imaginary case studies as exercises in application and problem solving.

EVALUATION

No training plan is complete without an evaluation component. It is not good enough to put one's best resources into training and expect that one will obtain good results. It is necessary to examine those results carefully. This can be done in many ways:

- pre- and post-testing of knowledge;
- skill evaluation;
- pre- and post-assessment of attitudes;
- evaluation of participants' reactions;
- periodic performance evaluation;
- impact evaluation.

Testing Knowledge

Evaluation of knowledge gained during a training session or workshop can be informal or formal. It could take the form of verbal questioning or written tests.

It is important to know what knowledge the participants brought with them to the training sessions. If a participant scores 90% on the final test, for instance, this might be due to the fact that he or she entered training at that level. In such a case, the high score was not due to training at all. It is for this reason that one should give comparable tests before and after training. However, it is not appropriate either, to measure only raw gain—that is, the difference between pre- and post-test scores, since this does not give a true idea of how much knowledge lacking at the beginning of training has been acquired as a direct result of training. The adjusted gain score is a more reliable

indicator of what percentage of knowledge lacking at the beginning of training was indeed gained as a result of training.

The adjusted gain score is calculated according to the following formula:

$$\frac{\text{Post-Test Score} - \text{Pre-Test Score}}{\text{Maximum Possible Score} - \text{Pre-Test Score}} \times 100 = \text{Adjusted Gain Score}$$

If, for example, a participant scores 25% in the pre-test and 75% in the post-test, it is tempting to believe that he or she has upgraded knowledge by 50% (the difference between pre and post-test scores). The adjusted gain score, on the other hand, indicates that the participant has gained 66% of the knowledge lacking at the start of training.

The adjusted gain scores can be used to begin evaluation of the quality of training provided. The part of a trainee's knowledge which was acquired as a result of the training itself is revealed. If many trainees have low adjusted gain scores, this is an indication that training has been ineffective—at least as a means of transferring knowledge.

Evaluation of Skills

When it comes to the evaluation of skill development, it is not practical to measure skills before and after training. However, it is practical to measure the results of skill testing at the end of training. This is best done using a performance evaluation checklist based on the actions described in the task analysis.

To determine whether the skills learned during training are carried over into daily work, performance evaluation should be conducted periodically in the work setting, at intervals of one month, three months, and six months, on the occasion of supervisory visits.

An objective manner for testing the proficiency of laboratory technicians consists of evaluating the results obtained by them in performing assays on a panel of known sera, included among specimens to be tested.

Evaluation of Training by the Trainees

When evaluating training, it is interesting and important to learn the trainees' perception of its value:

Did they feel that the training was relevant and useful to their work?

Were they convinced that the objectives announced had been achieved?

What did they think of the atmosphere of the course and the learning environment in which they worked?

What was their opinion of the facilitators, demonstrators, or instructors?

Did they feel that their experience, knowledge, ideas, and opinions were valued?

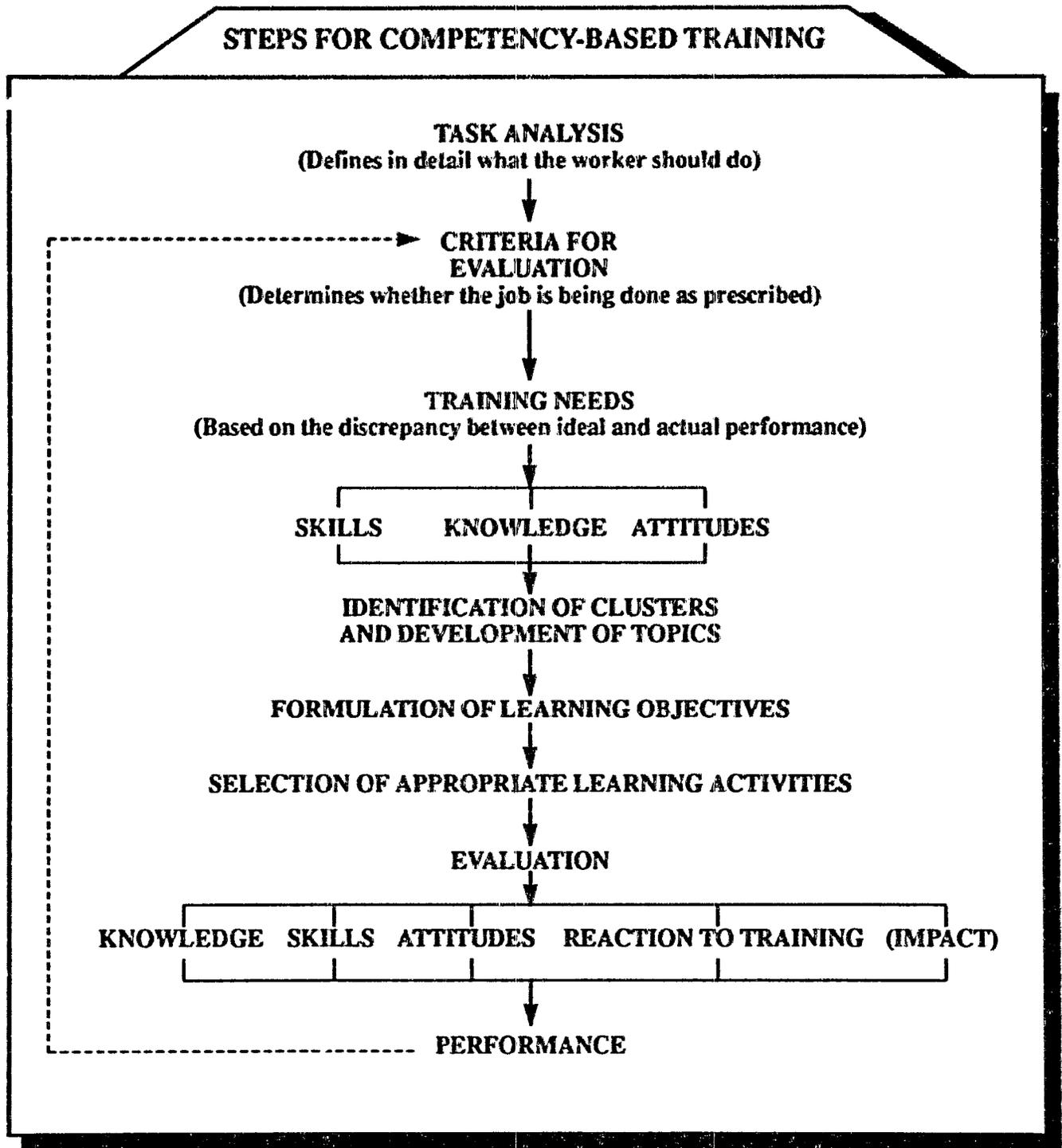
Questions such as these can be included in a questionnaire given to participants at the end of training, with their responses treated anonymously.

Evaluation of Impact

Ideally, the impact of training on the health problem it addresses should be evaluated. However, this would be a difficult, costly, and time-consuming effort, requiring special expertise not normally possessed by trainers.

The flow chart below represents the CBT steps covered in this section of the chapter:

FIGURE 7-1



TRAINING INTERVENTION FOR AIDS PREVENTION

It is obvious that training interventions can play an important role in the prevention of AIDS and the control of the present world pandemic. A multiplicity of such efforts has taken place, ranging from regional and national workshops to training sessions at the community level.

A common problem, however, is that the word “training” has been loosely used to include activities such as health education, awareness-raising, and information dissemination. These are all essential and valuable activities in themselves, but they are not, strictly speaking, training interventions.

Training—and especially competency-based training—is aimed primarily at assisting health care providers and others to perform the functions to which they have been assigned. It is not principally a means of information transfer, but rather a preparation for use of certain technologies or techniques. (Certain of these technologies might be used subsequently for purposes of knowledge transfer or information dissemination. Then, training would address the techniques of communication rather than the content.)

What is the role of training, as we have tried to define it, in AIDS prevention? The answer to this question lies in consideration of what interventions need to be made in order to prevent AIDS.

DOMAINS OF AIDS PREVENTION

We know that HIV can be transmitted:

- by contaminated blood;
- by sexual intercourse;
- perinatally, from mother to child.

AIDS prevention would therefore seem to lie in three domains:

- preventing transmission of HIV through transfused blood, or by objects contaminated with blood containing the virus;
- promoting safer sexual practices;
- preventing pregnancies in seropositive mothers.

Let us explore where CBT can intervene in each of these three domains:

Blood

We know that HIV can be virtually eliminated from a nation’s blood supply by efficient screening for antibodies to the virus. A variety of tests are used for doing so, each of different complexity. The effectiveness and reliability of such tests depend to a great extent on the manner in which they are performed by laboratory technicians. Some of the training interventions which might be considered in this connection include:

- performance and interpretation of existing and new tests for HIV antibodies;
- collection of blood samples by venipuncture or, in some cases, on filter paper;

- techniques for blood pooling;
- precautions to be observed before, during and after testing;
- comparative studies of assays;
- counseling before and after HIV antibody testing.

In many situations, it is not practical to screen blood, especially at peripheral health centers. In such settings, the only way of curbing transmission of HIV through transfused blood is to reduce the number of transfusions that are given and to substitute alternative methods of blood expansion. This would seem to indicate the need for prescriptions and use of alternatives to blood transfusion.

Since it has been postulated that HIV transmission can take place through the use of unsterile needles, syringes, and cutting instruments, there would appear to be a need for training of nurses and auxiliaries in:

- effective methods of sterilization and decontamination;
- universal precautions.

Safer Sexual Practices

This might seem to be a domain in which education of individuals and groups would have prime importance, and in which there is little need for CBT of a technical nature. However, since much of the educational effort will fall to health care providers, and perhaps predominantly to family planning workers, there seems to be a real need for training in:

- using techniques and strategies for communication;
- understanding counseling guidelines;
- training peer educators;
- developing, field-testing, and producing educational materials;
- procuring, storing, and distributing condoms.

Perinatal Transmission

Family planning workers and midwives in many countries would benefit from training in:

- counseling of seropositive women with regard to avoidance of pregnancy through use of appropriate contraception;
- correct use of condoms.

RELATED ACTIVITIES

A number of activities related to all three of the above domains could be enhanced considerably through CBT:

Epidemiologic Studies

- methodologies and application
- collection of samples
- use of computers for data analysis.

KAPB (Knowledge, Attitudes, Practices, and Behavior) Studies

development and field-testing of survey questionnaires

sample selection

interviewing

tabulation and interpretation of survey results

use of computers for data analysis.

Cost Analysis

One often neglected aspect of project management is the analysis of initial and recurrent costs. Training in cost-analysis methods and techniques would therefore be invaluable, where needed. Training in accounting systems would also prove of great help in a number of countries.

Management and Supervision

Some aspects of management where CBT could play an important role have already been noted. Training in management is needed in many countries, at many levels:

Laboratory supervisors, administrators, and nursing staff could benefit from training in the control of supplies, the care and maintenance of equipment, and management of personnel.

National AIDS coordinators, project managers and executives should benefit from training in leadership and formative supervision. Many of them are also in need of training in project implementation and management, which would assist them to make the transition from medium- and long-term plans to reality.

Training in project monitoring and evaluation methods would prove invaluable in the AIDS prevention arena.

Training of trainers is probably the most important of all training interventions, since it enhances the capacity of countries to plan and implement their own training programs.

Such opportunities for CBT, with its emphasis on **doing** rather than merely knowing, is by no means exhaustive.

Almost all aspects of AIDS prevention can be approached from the point of view of what must be done, when, and by whom. Tangible positive results can be obtained by:

carefully defining and analyzing the tasks to be accomplished;

setting up a system for evaluation of the performance of the defined tasks;

determining discrepancies between ideal and actual performance;

defining what needs remediation.

When following the above steps, the stage is set for training and:

developing measurable learning objectives;

selecting appropriate learning activities;

conducting training that is active and participatory in character.

By following such a path, an AIDS prevention program is virtually assured of success in producing graduates from training who have the conceptual, analytical, organizational, manual and verbal skills enabling them to play their part, as effectively as possible, in the fight against AIDS.

TARGETING OF PREVENTION PROGRAMS IN AFRICA

Peter Lamptey
Malcolm Potts

INTRODUCTION

AIDS is the only important new epidemic to occur in the history of modern, scientific medicine. The most common route of transmission is sexual. It follows, inescapably, that those most likely to acquire and spread the disease will be those who have the most sexual partners.

The AIDS epidemic in Africa follows a set pattern: initially, there is the introduction of HIV infection into a relatively small group of people who are at most risk of getting infected because of their sexual behavior. This group spreads the infection to other high-risk groups. In time, the epidemic spreads to the rest of the population.

Those at high risk of acquiring or spreading HIV sexually can be divided into two specific groups – the primary risk group and the secondary risk group:

The primary risk group consists of prostitutes, clients of prostitutes, and other people who frequently change sexual partners. Most often, persons in these primary risk groups are found among truckers, traders, businessmen, military personnel, fishermen, prisoners, sailors, or young unmarried adults living in urban areas. However, it should be emphasized that it is behavior and not vocation, age, or marital status that puts an individual at risk of acquiring infection. For example, those prostitutes or clients who regularly and consistently practice safer sex (nonpenetrative sex or penetrative sex using a condom properly) reduce their risk considerably.

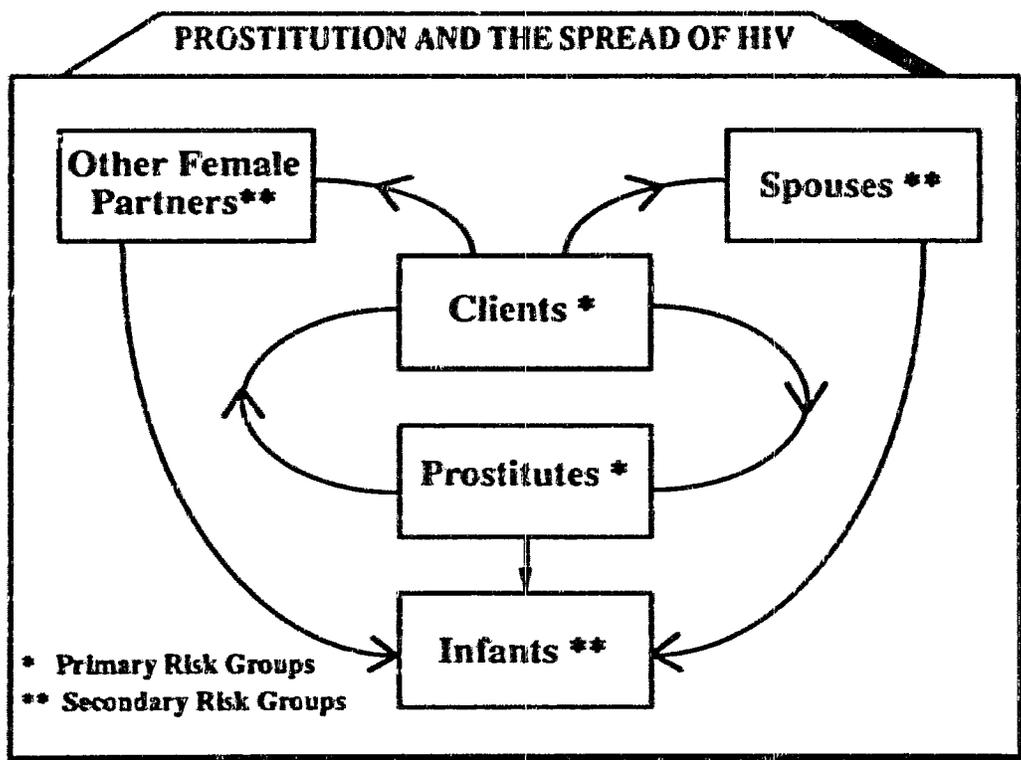
Although all persons who practice risky behavior are of concern, for the purposes of targeting, it is more practical to identify the groups who most often practice high-risk behavior. Although we know that the infection spreads very quickly, especially within the prostitute population, this group continues to practice high-risk behavior. Prostitutes remain at high risk, at least in part, because of their societal status; one of the factors which makes AIDS a “political” as well as a “clinical” disease is that prostitutes often live on the fringes of society. Decision-makers do not always find it easy to mobilize society’s resources to meet fringe-group needs. Indeed, in some cases, the high-risk and other activities of primary risk groups may be contrary to a nation’s statute law, and these activities

are nearly always outside the traditions of majority custom. However, officially ignoring the spread of HIV infection within primary risk groups who appear to live on society's fringe is exceedingly shortsighted. As HIV infection spreads, it does not stay limited to prostitutes or other segments of the primary risk groups; it begins to infect an increasingly larger number of people in the secondary risk group, and eventually spreads to the rest of the general population.

The secondary risk group consists of individuals who do not actively practice behaviors that put them at risk of acquiring infection but are infected by the primary risk group. Sexual partners of individuals who practice high-risk behavior are within this group, including regular nonpaying partners (spouses, boyfriends) of female prostitutes, regular sexual partners (spouses, girlfriends) of clients of prostitutes, and sexual partners of intravenous drug users. Infants of infected mothers are also in this secondary risk group. An understanding of the difference between the primary and secondary risk groups is essential for prevention programs. Most of the current AIDS prevention efforts are directed at changing the high-risk practices of the primary risk groups. Individuals in the secondary risk group who do not practice high-risk behavior are often not aware they are at risk, and therefore would not initiate any behavior change to reduce their risk of infection.

The size of the primary and secondary risk groups and their interaction with the rest of the general population is an important determinant of how quickly the infection spreads within a country. Figure 8-1 illustrates the interaction between primary and secondary risk groups:

FIGURE 8-1



Reducing the transmission of HIV in a population requires two essential first steps:

an understanding of the groups at risk and the behavior that puts them at risk;

the design of appropriate, targeted interventions aimed at slowing the spread of the virus in the groups at risk, which become known as priority target groups.

Priority target groups usually include:

Primary risk groups, such as prostitutes and clients of prostitutes. It is important to note that prostitutes do not cause AIDS, and they must not be made into scapegoats. Prostitutes, after all, acquire the infection from clients. Because infection is primarily transmitted sexually, however, prostitutes are likely to acquire the disease early in the epidemic, and they become a primary source of transmission to others. It follows that some targeted, priority attention must be paid to primary risk groups such as prostitutes early in the spread of the virus.

Secondary risk groups (as described earlier) are a second major target for priority attention. In East and Central Africa, the infection has already spread to substantial numbers of people in this group, but in other parts of Africa, the infection appears to be predominantly in the primary risk groups.

Other groups also need attention, including adolescents and school children, who may be at relatively low risk, but whose risks may become substantial as they grow older and as the epidemic spreads. In some countries adolescents may be at risk of HIV infection because of frequent partner change. Female adolescents are also at risk of being infected by their male school teachers. In school settings, sexual relations between male school teachers and female students have been reported. The situation usually involves a few teachers and many coerced student partners.¹ There have been reports in other countries that older men are now seeking sexual relations with adolescent girls because they are less likely to be infected with HIV. Adolescents are therefore an important priority target group.

Although the targeting of AIDS prevention programs has many potential facets, this chapter focuses on priority target-group issues by:

describing the epidemiology of AIDS in the primary risk group;

explaining the rationale for targeting this primary group;

reviewing a number of targeted intervention programs in order to understand the lessons learned to date.

EPIDEMIOLOGY OF AIDS IN HIGH-RISK GROUPS IN AFRICA

HIV infection has become a worldwide problem, complicated by the fact that its epidemiologic characteristics vary by location. The situation in Africa is further complicated by the presence of two viruses, HIV-1 and HIV-2, which appear to have different histories, epidemiologies and prognoses.² (For more information see Chapter 1 on Epidemiology of AIDS in Africa). Both viruses are present in the high-risk populations of Africa.

In Africa the most important and largest primary risk groups are prostitutes, clients of prostitutes, and other persons who frequently change sexual partners.³⁻¹² The most important behavioral factors that put these individuals at high risk of HIV infection are:

- frequency of sexual partner change;
- multiplicity of sexual partners.

A number of other risk factors have been identified in HIV transmission:^{3,13}

- genital ulcer disease caused by chancroid, syphilis, and herpes;
- lack of circumcision in males;
- other STDs, including genital chlamydia infection and trichomoniasis. (For more information see Chapter 1 on epidemiology and Chapter 5 on STDs.)

It should be noted that in Africa, virtually all prostitutes are women. In some other parts of the world, a proportion (usually small) of prostitutes is male. African prostitutes differ from their counterparts on other continents in other ways:

- They enjoy somewhat more autonomy.
- They are not likely to be controlled by pimps.
- They are not usually found in houses of prostitution.
- To date, they have rarely used condoms.
- They provide vaginal intercourse to nearly all clients, while prostitutes in developed countries provide oral sex more frequently.

The Center for International Research, U. S. Bureau of the Census, has compiled a comprehensive HIV/AIDS Surveillance database that contains over 4,300 data entries for Africa.² Although the authors (Torrey and Way) emphasize the presence of selection bias in all data, they add that a collection of large numbers of non-random surveys provides a reasonably accurate picture of the epidemic in Africa. **Figure 8-2 on the next page shows the HIV-1 surveillance for high-risk urban populations, such as prostitutes, in Africa.** The highest rates are concentrated in the high-risk groups of Central Africa.² Rates of 50% to 90% are common among prostitutes in the major urban centers of Tanzania, Uganda, Malawi, Rwanda, and Kenya. Moderately high rates of HIV-1 infection are found in high-risk groups in the urban areas of other parts of Africa.² These include Ethiopia (18.1%), Gambia (30.0%), Togo (31.1%), and Mali (48.0%). The blank areas represent countries where data on high-risk groups are not available. **Figure 8-3 (next page) shows the distribution of HIV-2 in high-risk groups in Africa.** French West Africa has the highest seroprevalence levels, although the virus has also spread to urban areas of Angola and Mozambique.²

**AFRICAN HIV-1 SEROPREVALENCE
FOR HIGH-RISK URBAN POPULATIONS**

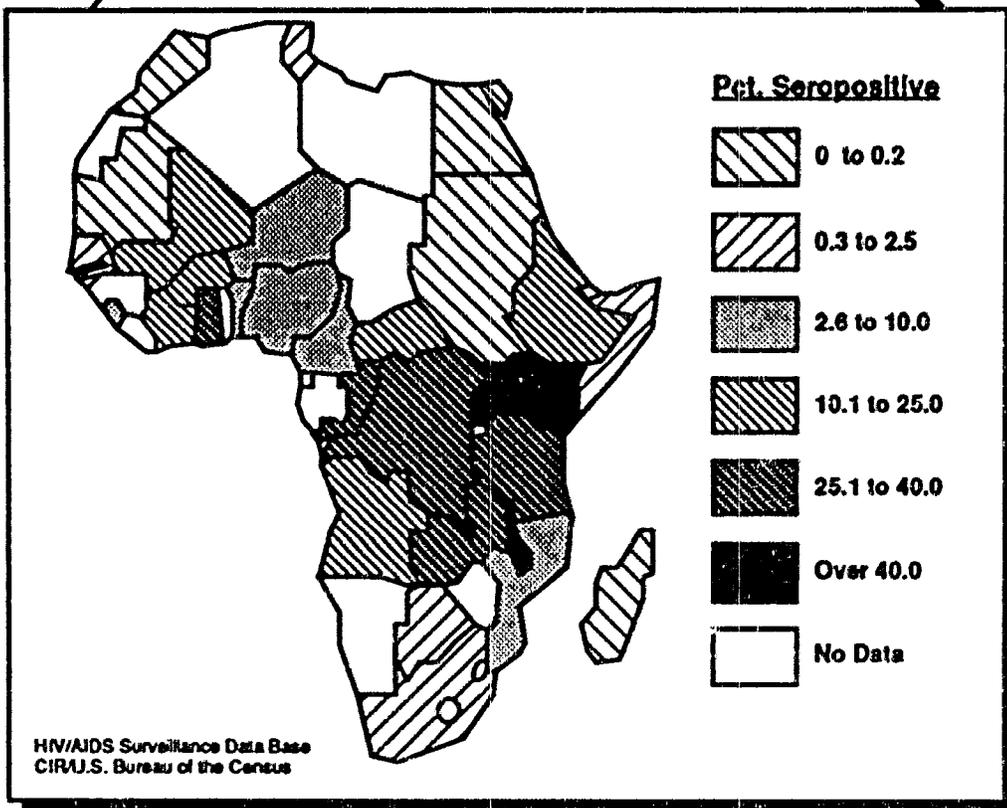


FIGURE 8-3

**AFRICAN HIV-2 SEROPREVALENCE
FOR HIGH-RISK URBAN POPULATIONS**

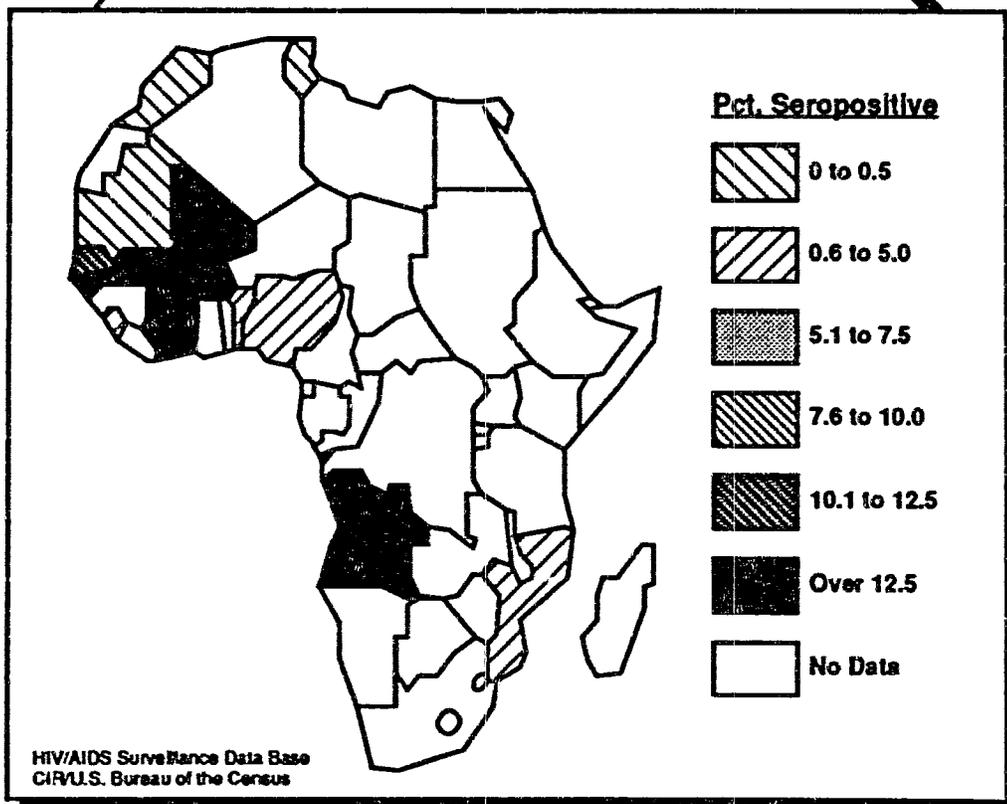


FIGURE 8-4

**AFRICAN HIV-1 SEROPREVALENCE
FOR LOW-RISK URBAN POPULATIONS**

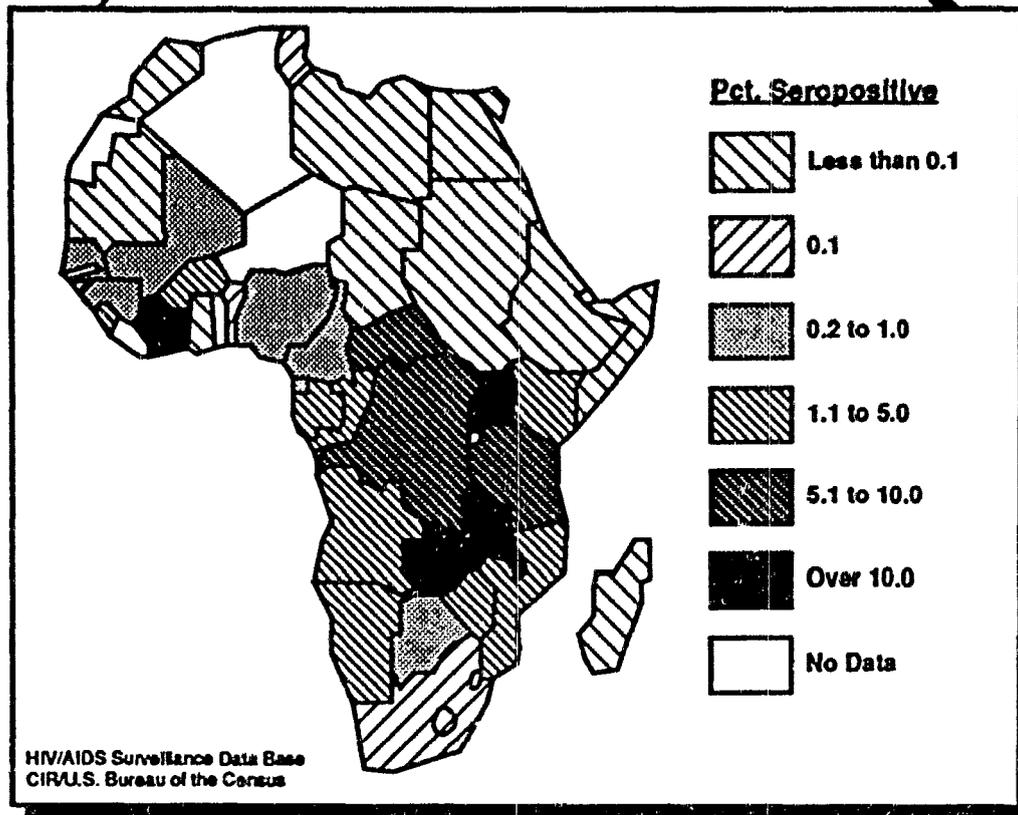
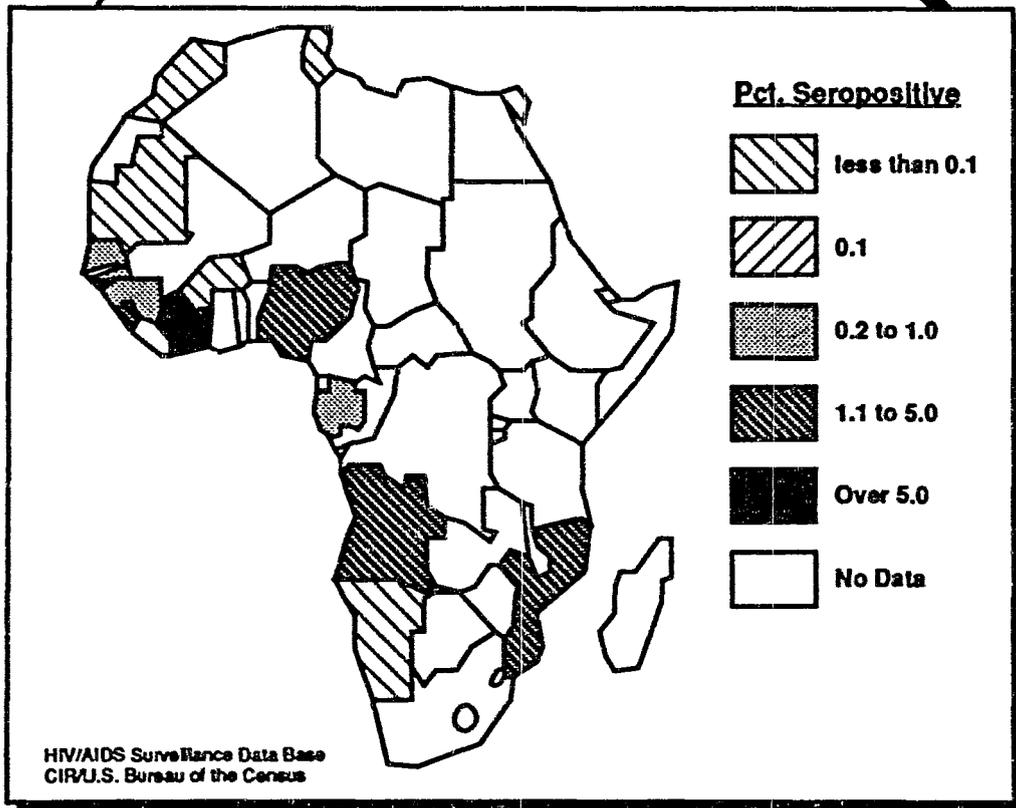


FIGURE 8-5

**AFRICAN HIV-2 SEROPREVALENCE
FOR LOW-RISK URBAN POPULATIONS**

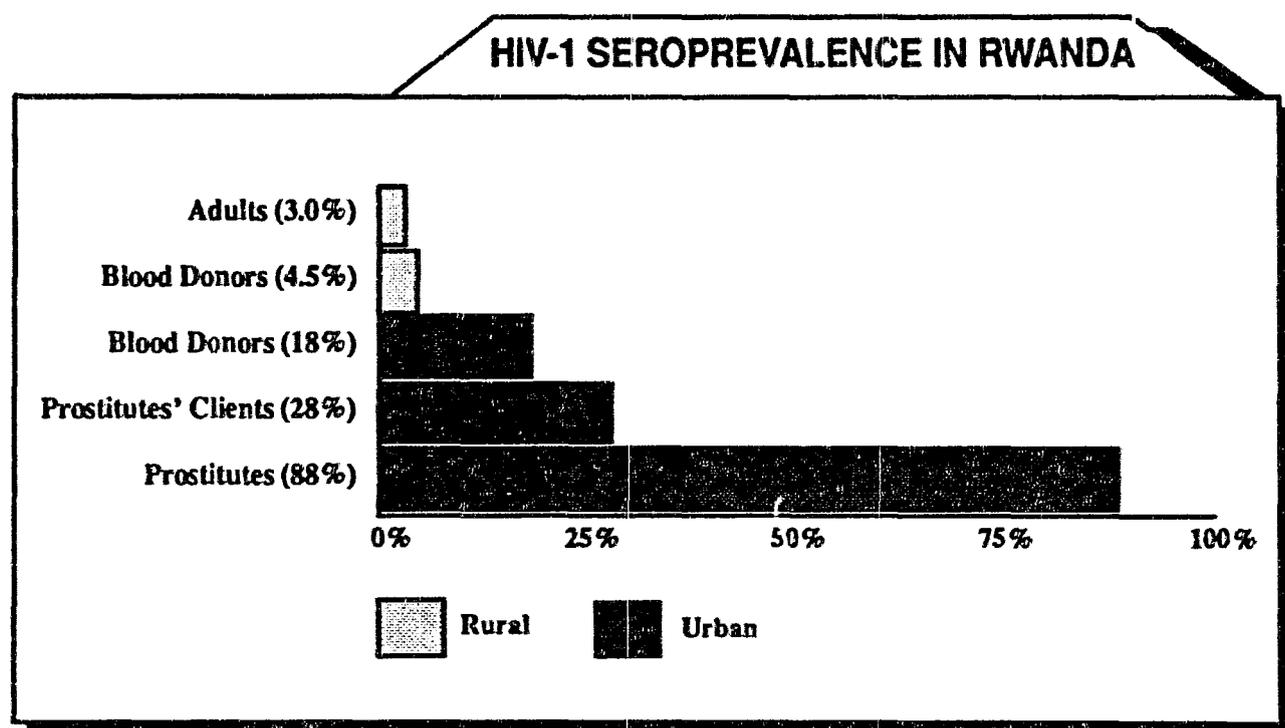


Figures 8-4 and 8-5 (opposite page) show the seroprevalence of HIV-1 and HIV-2 respectively, for low-risk urban populations in Africa. Low-risk groups are defined as pregnant women, healthy adults, and blood donors.² A comparison of Figures 8-2 and 8-3 with Figures 8-4 and 8-5 shows consistently higher seroprevalence rates for both HIV-1 and HIV-2 in high-risk groups compared to the low-risk populations. Larson¹⁴ has shown that the seroprevalence rates in African cities may be directly related to their sex ratios (the number of men to 100 women); the higher the urban sex ratio, the higher the HIV seroprevalence in the high-risk groups. He suggested that the higher the sex ratio, the more likely it may be to have high levels of prostitution and STDs such as AIDS. The ratio may be higher in cities than in other areas of Africa; a 1971 survey showed that about 57% of the spouses of males in Nairobi lived outside the city, usually in rural areas.¹⁵

There is a paucity of data on the prevalence of HIV in the partners of prostitutes, but one of the most important and consistent risk factors in HIV-positive men is contact with prostitutes.^{3,5-8}

Figure 8-6 below illustrates the comparative increase in HIV infection found in one study in Rwanda, where 28% of the clients of prostitutes were HIV seropositive.¹⁶ It is instructive to note the comparative prevalence rates of HIV in various other segments of the population in Rwanda: rural adults and blood donors have the lowest HIV seroprevalence rates (3.0% and 4.5%, respectively). Clients of prostitutes and prostitutes in urban areas have the highest prevalence rates (28% and 88%, respectively).

FIGURE 8-6



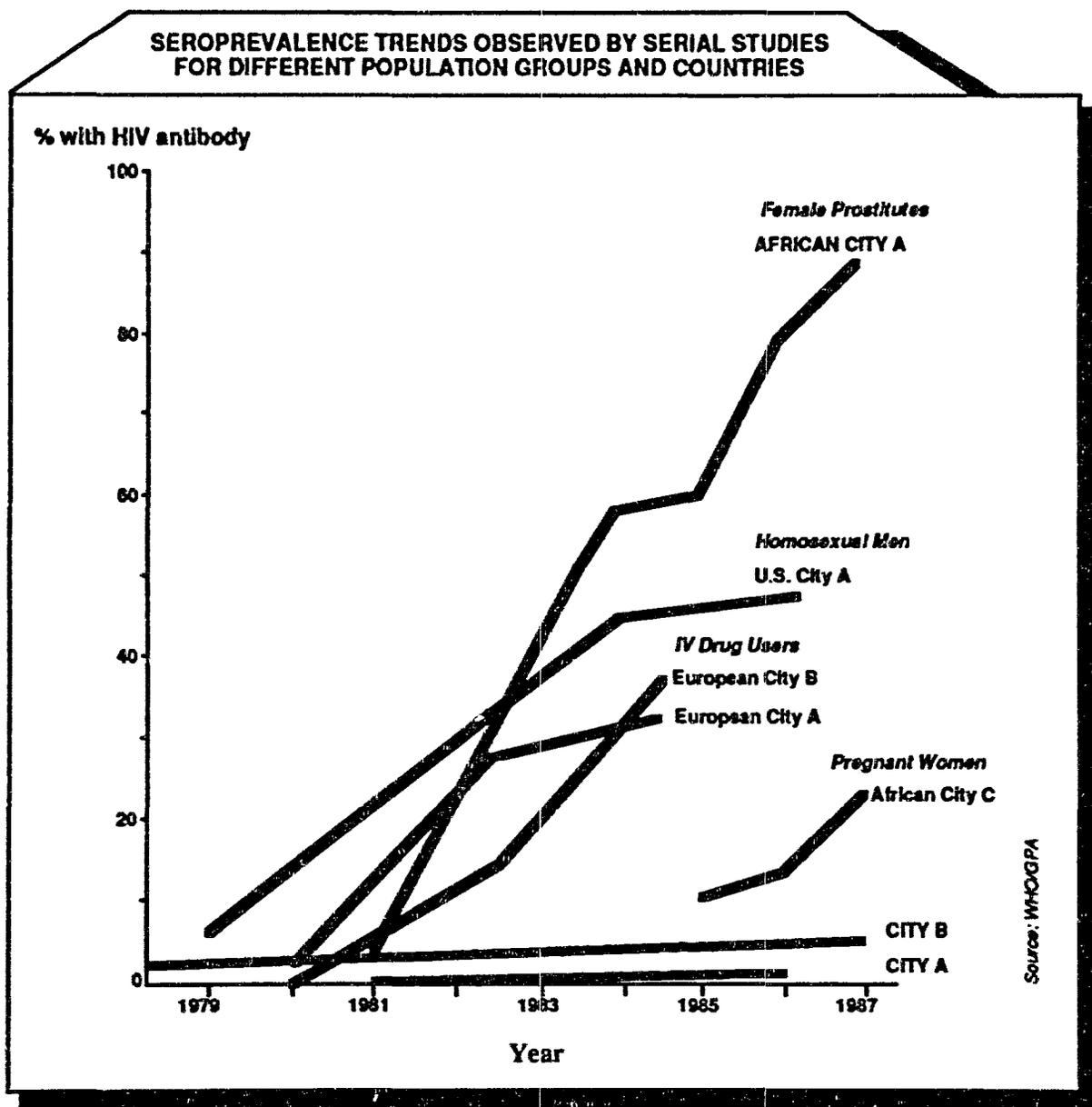
Other studies confirm the risk to men who have had contact with prostitutes: in Zimbabwe 80% of 275 seropositive men reported prostitute contacts.¹⁷ In Nairobi the incidence of HIV infection in men who had a single exposure to an infected prostitute and who acquired an STD from this exposure was 8%; in uncircumcised men who simultaneously acquired a genital ulcer during a single prostitute exposure, the HIV infection incidence was 28%.¹⁸

Truck or lorry drivers are a major risk group that has been more extensively studied. Carswell et al. reported an HIV seroprevalence rate of 35.2% in lorry drivers and their assistants in southwest Uganda.¹⁹ Truck drivers were thought to be responsible for spreading venereal syphilis in western colonial Kenya.²⁰ The drivers picked up female hitchhikers and accepted sexual favors as payment. In East Africa, truck drivers travel between large urban areas, Nairobi-Mombasa, Nairobi-Kampala, Mombasa-Kigali, etc., but also stop in small rural centers to make deliveries or rest for the night. They frequent local bars and hotels and often visit prostitutes.

The military is an important risk group often overlooked. Data from the armed forces show HIV prevalence rates that are higher than the rest of the general population, but lower than those of prostitutes and other clients of prostitutes. Rates have been reported of 13.0% in Angola²¹ (HIV-2), 11.8% in Guinea Bissau²² (HIV-2), and 33.3% in Uganda²³ (HIV-1).

Figure 8-7 below shows the rapid change in HIV seroprevalence in prostitutes in an African city.²⁴ The prevalence rose rapidly from 4% in 1981 to nearly 90% in 1987. In comparison, the rise in prevalence rates in the general population of pregnant women was relatively slow.

FIGURE 8-7



When these data are combined they indicate that, in Africa, prostitutes and their clients are usually the first to be infected with HIV and have the highest seroprevalence rates. A similar pattern of spread is beginning to manifest itself in Asia. Prostitutes, and to a lesser extent their clients, constitute an important and reachable priority target group in Africa.

In July 1989, the World Health Organization's Global Programme on AIDS and its Sexually Transmitted Diseases Programme convened a consultation group to evaluate the potential role of prostitution in HIV transmission, and to identify interventions targeted towards prevention of HIV infection among prostitutes and their clients.²⁵

The consultation group defined prostitution as a transaction in which sexual services are provided in exchange for money or things of monetary value provided to the prostitute or some other party. Prostitution occurs worldwide. Although there is considerable variation around the world in the organization and characteristics of prostitution, women become prostitutes primarily for reasons of poverty and inadequate alternatives to earn money. Most African prostitutes, as in many other parts of the world, are mothers who are solely responsible for the care of their children.²⁵⁻³⁰ In Africa prostitutes may be referred to as streetwalkers, bar-girls, barmaids, call-girls, hospitality-girls, etc. Although the descriptive names used may vary considerably, the basic element of "sex for money" is a constant. However, in addition to the "professional prostitute" there are many women who exchange sexual services to augment their income or to meet special needs.¹ Sometimes women are steady partners of one or a few men. They may be referred to as "spares" in Zimbabwe,¹ "seconde office" in Francophone Africa, "girl friends" or "town wives" ¹ in parts of West Africa. These women do not regard themselves as prostitutes, but they are at considerable risk of HIV infection because of their frequent partner change. The WHO consultation group reaffirmed that prostitution is an important route of sexual transmission of HIV from clients to prostitutes and from prostitutes to clients.

RATIONALE FOR TARGETED INTERVENTIONS

Mathematical modeling demonstrates that the individuals who have the highest rate of partner change and/or number of partners contribute disproportionately to the acquisition and transmission of STDs, including HIV infection.^{31,32} The mean rate, the variance of partner change, and the likelihood of infectivity within a relationship are particularly important in the spread of infection between high-risk groups, such as prostitutes and their partners.³²

There are two major reasons why prostitutes, their partners, and other people who frequently change partners should be targeted with AIDS intervention programs:

They are at high risk of acquiring or transmitting HIV infection.

They can be identified and reached with intervention programs.

These characteristics make targeted programs especially effective, particularly in areas with limited resources. Although not without controversy, targeted programs for prostitutes need not have a high political profile; public advertisement, for example, is not usually needed.

Clients of prostitutes can and should be targeted simultaneously with prostitutes. Although the clients are usually more difficult to reach, they may be more accessible than the larger and

more dispersed group of sexually active individuals who eventually come into direct or indirect contact with the partners of prostitutes.

Mathematical modeling of HIV also helps us to compare the impact of alternative interventions, allocate resources, and advise on policy formulations. Models that have looked at prostitution suggest that interventions directed at prostitutes and their partners could have a dramatic and cost-effective impact on HIV transmission.^{31, 32}

In countries that are in the early phases of the epidemic, programs designed to reach the primary risk groups are the most rational and cost-effective prevention approach. The strategy is to try to:

prevent individuals with multiple partners and frequent partner change from becoming infected;

contain the infection within relatively small populations before it spreads to the general population.

Such targeted interventions are likely to have the greatest impact when undertaken quite early in the epidemic. Such a strategy is doubly important when dealing with an incurable and apparently universally lethal disease for which no vaccine exists. The rapid spread of HIV in the homosexual communities in Europe and the U.S.A., in the prostitute population of sub-Saharan Africa,^{5,6,7,9,33,34} and in the IV drug population of Bangkok³⁵ are excellent examples of the need to reach these high-risk groups early.

As the epidemic progresses and spreads into the secondary risk group and then into the general population, targeting of these primary risk groups will no longer be sufficient by itself to substantially reduce the number of individuals infected via sexual transmission.

Some African countries have already reached a stage where HIV infection rates in urban populations of pregnant women range from 10% to 30%. Rates of 16.4% in Blantyre, Malawi;³⁶ 16.3% in Bujumbura, Burundi;³⁷ 30.3% in Kigali, Rwanda;³⁸ and 24.3% in Kampala, Uganda³⁹ have been reported.

When conditions reach this level of infection, the priority target population for intervention must extend beyond the primary risk groups to include the secondary risk group as described earlier. However, when incorporating this much larger group, the targeting of prostitutes and their clients remains important because of the increased opportunity for the further spread of infection.

TARGETED INTERVENTION PROGRAMS

Groups who are at high risk of acquiring HIV infection or other STDs have generally been neglected in health programs. Programs to prevent and control STDs in sub-Saharan Africa are rare and almost always under-funded. The rapid spread of HIV infection and the role of genital ulcer disease in HIV infection has focused new attention on these primary high-risk groups.

Pilot Programs

One of the earliest targeted AIDS-education programs for prostitutes was initiated by Elizabeth Ngugi in Nairobi, Kenya, in 1985.^{27,40} About 600 prostitutes were targeted in a community-based health education program to increase their AIDS knowledge and their use of condoms with clients. Health education was provided through individual counseling sessions at a clinic and through “barazas” (general community meetings). The program has been effective in increasing condom use among prostitutes.

In 1987 Family Health International, with funding from AMFAR (American Foundation for AIDS Research) and USA for Africa, initiated three small-scale operations-research projects in Accra (Ghana),²⁸ Yaounde (Cameroon)^{26,29,41,42} and Bamako (Mali).⁴³ The goal of these studies was to evaluate a strategy to limit the spread of HIV infection by training a selected group of prostitutes as health educators who would:

- teach their peers about AIDS;
- motivate their peers to use condoms with their clients.

All three of these early pilot programs demonstrated that prostitutes:

- were feasible targets for AIDS education programs;
- can be successfully reached through peer educators;
- are willing to accept the use of condoms with their clients.

These programs were innovative and successful, but they also demonstrated how little we knew about the target groups.

Figure 8-8 shows an early AIDS education brochure developed for use by prostitute peer educators in Ghana.

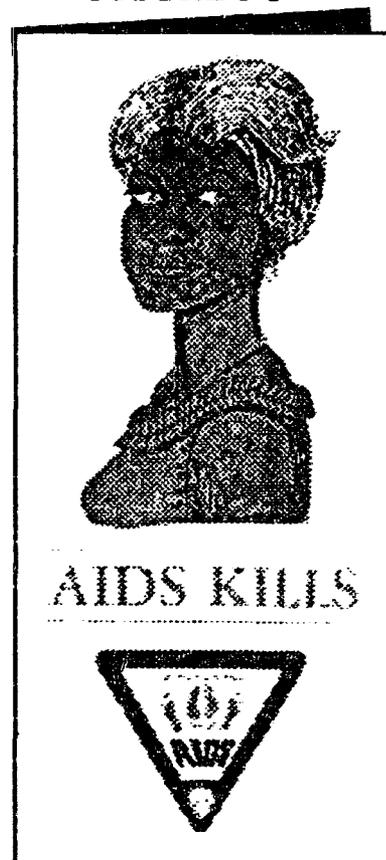
There were some difficulties encountered in the early interventions. It was discovered that although there are different types of prostitutes, all share some common characteristics:

- They are very mobile, which makes follow-up difficult.**
- Education programs are not successful in getting women to quit prostitution.**

There were also some encouraging directions in the early interventions. It was discovered that prostitutes are eager to learn about AIDS and minimize their risks; therefore:

- Targeted programs are successful in improving AIDS knowledge among prostitutes.**

FIGURE 8-8



Some prostitutes are willing to accept and use condoms with their clients.

Finally, it was demonstrated that the use of peer education was one acceptable and effective strategy with prostitutes, and:

- some prostitutes can be trained as peer educators;**
- some prostitutes can be reached through peer education;**
- prostitute peer educators are effective in educating their peers;**
- condom distribution by peer educators is effective (when the target population is small).**

The pilot programs also showed that it is important to involve the clients/partners in these programs. Key findings included:

- Some clients refuse to use condoms.**
- Use of condoms with boyfriends and husbands was very low.**

Questions which remain unanswered by the small number of pioneer interventions include:

- What level of condom use is necessary to demonstrably slow HIV infection?**
- From the point of view of cost, is it best to focus on prostitute education and condom distribution, or on improvements in treating STDs among prostitutes and their clients, or both?**
- Will it be difficult to maintain condom use in an ever-changing group of prostitutes? Can behavior change be sustained?**
- Will prostitutes or their clients purchase condoms, and what is the role of commercial and subsidized distribution?**
- Can prostitutes be safely offered any alternative to traditional condoms, such as the use of spermicidal/virucidal vaginal preparations or female condoms?**

Below and on the following pages, three additional programs are described to illustrate different approaches being used to reach larger groups of prostitutes and their partners in different African settings. These programs are:

- a targeted intervention program in the Cross River State of Nigeria;**
- a targeted intervention program in Bulawayo, Zimbabwe;**
- a social marketing program in Zaire.**

TARGETED INTERVENTION IN THE CROSS RIVER STATE, NIGERIA³⁰

This program is being implemented by the Cross River State AIDS Committee and the Ministry of Health, with technical assistance and funding from AIDSTECH/FHI. The Project Manager is Dr. Eka Williams, Chairperson of the Cross River State AIDS Committee.

The goal of the program is to reduce STD rates in prostitutes and their partners and to keep HIV seroprevalence rates low (currently less than 2%). The targeted priority groups include prostitutes, prostitutes' clients, hotel managers and proprietors (who may also be non-paying partners of prostitutes).

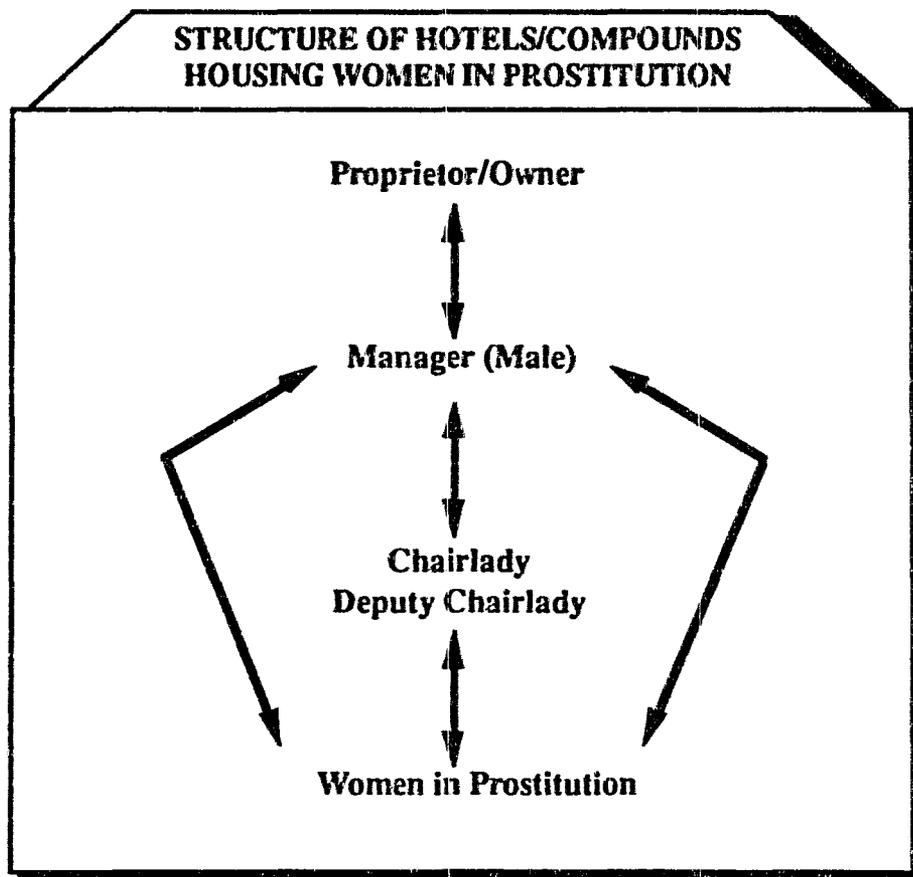
There are two types of prostitutes in the state:

Full-time prostitutes, who live alone or with their children and work in hotels and compounds. As shown in Figure 9 below, this group has formal and recognizable organizational structures. This structure provides a basis for program activities. On average, a full-time prostitute has five clients per day and charges about 40 cents for a single act and \$3.00 for a night. Most of the clients are local Nigerians.

Part-time prostitutes, who are not as readily recognizable. They operate from large hotels and nightclubs and cater to foreigners, businessmen, and other visitors. They do not have a formal or recognizable social structure, but can be reached through their peers. On average, a part-time prostitute sees one or two clients a day and charges \$3.00 to \$7.00 per act and \$13.00 to \$20.00 per night.

In particular, the targeted priority group of clients and other partners of full-time prostitutes is a heterogeneous group, but they can be reached at appropriate times in the hotels and compounds where the prostitutes live and work or through managers at hotels and compounds. Figure 8-9 shows a typical structure:

FIGURE 8-9



The project sites are five towns along a major highway. To date, activities have begun in two towns – Calabar and Ikom. In Calabar, the program has been established in 19 intervention sites: 13 hotels and compounds of full-time prostitutes and six sites for part-time prostitutes. Four hundred fifty women and about 1,000 clients have been reached. In Ikom, there are five intervention sites for 300 full-time prostitutes and about 1,500 clients who are participating in the program. The program will be extended to three other locations in the second year of the project.

The program activities include health education, condom promotion and distribution, and STD control and prevention.

The health education program includes:

- on-site education sessions in hotels and compounds for prostitutes and clients;**
- focus-group discussions;**
- distribution of educational materials;**
- AIDS films in nightclubs;**
- outreach by the project's male (hotel manager) and female (prostitutes) peer health educators;**
- periodic workshops involving prostitutes and hotel managers to discuss program and other issues.**

Promotion and distribution of condoms to prostitutes and clients (partners) are done by peer health educators, managers, and chairladies or supervisors of the full-time prostitutes. The promotional activities include demonstrations of:

- proper condom use, and**
- ways to convince clients to accept condoms.**

Program staff pay occasional visits to reinforce the need to use condoms. Regular condom users are also enlisted in promotional activities. Some clients report that condom use is more economical for STD prevention than prophylactic antibiotics. An STD clinic has been established to provide services to the target population. Patients are self-referred or referred by the prostitutes and hotel managers. Services include:

- diagnosis and treatment of STDs;**
- health education and prevention counseling;**
- follow-up of patients;**
- condom distribution;**
- voluntary HIV testing (if requested).**

LESSONS LEARNED AND KEY POINTS TO SUCCESS

The Need for Active Involvement of Members of Target Groups. The program has involved key members of the target population in planning and implementation. Hotel proprietors and owners, managers, chairladies, and motivated prostitutes representing the various intervention sites have been involved in a series of meetings at all stages of the project.

The Need for Flexibility in Program Design. The original program design called for extensive use of peer health educators. Results of focus-group discussions, KAP (knowledge, attitudes, and practices) surveys, and experience have shown that the existing structure in hotels and compounds is not compatible with this strategy. The strength of the program in this setting relies on the use of managers and chairladies. However, peer health educators can be better utilized to reach part-time prostitutes.

The Willingness of Program Staff to Respond to Other Problems. The program has identified and responded to other problems experienced by the target group. This has led to a feeling of trust and confidence which has contributed to voluntary participation in the program. Program staff have assisted prostitutes with client disputes, police detention, harassment, their children, and sanitation issues.

The Need for Official Recognition and Support of the Project. The State Ministry of Health and Cross River AIDS Committee have given full and visible support to the program. The Commissioner of Health has officially opened project workshops and the STD clinic. This is especially important to this group of women who, up until this time, had only identified government officials with harassment.

This program has used a combination of peer education and the existing social infrastructure to design an appropriate intervention. It is unique in several ways:

- It has a captive target population of prostitutes who work in hotels and live in compounds near the hotels.

- It has a well-organized social structure and a recognizable leadership.

- The hotel managers and proprietors are interested in the program.

- Clients are reachable and interested in participation in the intervention program.

Official support from the State Ministry of Health and AIDS Committee is a key feature for its success and sustainability.

The approach used by the Cross River State is appropriate for this priority target group, and can serve as a useful model for locations with similar patterns of prostitution and on-site infrastructure.

TARGETED INTERVENTION PROGRAM IN BULAWAYO, ZIMBABWE⁴⁴

This program is being implemented by the Bulawayo City Council with funding and technical assistance by AIDSTECH/FHI. The program managers are Dr. Barnet Nyathi, Medical Officer of

the Bulawayo City Health Department, and David Wilson, Department of Psychology, University of Zimbabwe.

The goal is to reduce the sexual transmission of HIV among prostitutes and their clients in Bulawayo, Zimbabwe's second largest city (population 700,000).

There are three main types of prostitutes in Bulawayo:

- 1. Street-based prostitutes who work primarily near hotels, bars, cinemas, late-night grocery shops, 24-hour service stations, and residential flats. They generally solicit men in cars, especially at service stations. Their clients are usually rich, middle-aged men who are embarrassed to enter bars frequented by prostitutes and who value the anonymity of street solicitation. This is the smallest of the three groups.**
- 2. Home-based prostitutes who work from their residences and solicit men from bars.**
- 3. Bar-based prostitutes who are the largest group. The term bar refers to privately-owned municipal "beer gardens," licensed bars, and "shebeens" (privately-owned, unlicensed, illegal bars). Bar-based prostitutes prefer to take clients to their homes.**

Prostitutes from all three types are found in most bars that permit the entry of single women. The prostitutes reported that they averaged 1.3 clients a night and about \$3.00 per act and \$6.50 for a night.

The program had six components:

- baseline research;**
- training of professional and community workers;**
- community outreach;**
- condom distribution;**
- strengthening of STD services;**
- evaluation.**

The baseline research was conducted among prostitutes, clients, STD patients, and the general population to provide ethnographic and psychosocial data for the design of the intervention. Some of the key findings are:

Economic factors are the major reasons for engaging in prostitution.

Prostitution is largely bar-based.

Clients have more negative attitudes toward condoms than do prostitutes.

There is an absence of social organization for prostitutes.

Clients averaged seven visits a month to prostitutes.

Two-thirds of clients are regular customers, and there is a substantial group of nonpaying partners.

Hotel security personnel are trusted by prostitutes and are key to communication with prostitutes.

A training program was held for nursing and health-education professionals, and community personnel (including prostitutes and client peer educators, hotel security personnel, bar personnel, and taxi drivers). The training covered:

biomedical facts about AIDS;

condom use;

counseling techniques;

collective development of specific community action plans.

The community outreach component of the program included meetings with prostitutes and clients involving video shows, posters, literature distribution, lectures, discussions, role playing, and condom distribution, demonstration, and practice. Meetings were held at prostitute residences, hotels, and bars. Hotel security personnel and peer educators conducted outreach activities in their networks. A workplace education session especially for transportation workers is planned.

The condom-distribution program supplements the national contraceptive-distribution program (which is the best in Africa). Condoms are distributed in prostitute residences, hotels, and bars using hotel security personnel, reception and bar personnel; in STD and other clinics; and through peer educators.

The STD services of the city have been further strengthened by training in diagnosis, treatment, and prevention counseling.

Observation, focus groups, and interviews with peer educators are used for formative evaluation of the program. Prostitutes and clients provided pre- and post-intervention reports on condom use in the last paid sex act. There appears to be close correlation between prostitutes and clients regarding the reported use of condoms during their last sex act.

LESSONS LEARNED AND KEY POINTS TO SUCCESS

This program employed a multiplicity of approaches in reaching prostitutes and clients:

It used nonconventional personnel such as hotel security personnel, receptionists, bar personnel, and taxi drivers as well as other community-based workers, such as prostitutes and client peer educators.

It was one of the few programs that directly used professional medical staff, which indicates the commitment of the city health services.

The program also emphasized a community-based approach with community meetings and condom distribution at prostitute residences, hotels, and bars. The commitment of the Bulawayo City Council is remarkable, and is likely to lead to a long-term sustainable program.

SOCIAL MARKETING OF CONDOMS TO HIGH-RISK GROUPS IN ZAIRE⁴⁹

In April 1989, Population Services International and AIDSTECH/FHI initiated a 15-month project to distribute condoms and provide AIDS-prevention education to a priority target group in commercial centers in Zaire: Goma and Matadi.

The goal of this program is to reduce the incidence of HIV and other STDs in prostitutes and their clients. A secondary goal is to reduce unwanted pregnancies in prostitutes.

In order to reach the targeted individuals, a system of condom distribution and information dissemination was created:

The program used social-marketing strategies similar to those used for mass consumer goods such as soft drinks (although mass-media brand advertising for condoms is thus far prohibited in Zaire). Condoms are packaged in Zaire under the local brand "Prudence."

To compensate for the inability to advertise products via mass media, the project used point-of-purchase brand-advertising materials which are displayed in pharmacies, medical centers, and other nontraditional outlets such as hotels, bars, and taxis. Examples are illustrated in Figures 8-10 and 8-11, below and on the next page:

FIGURE 8-10

POINT OF PURCHASE BRAND ADVERTISEMENTS



**FIGURE 8-11
WALLET CALENDAR CARD ADVERTISEMENT**

PRUDENCE Pour une meilleure Protection

STOP SIDA et MST 1990 EFFICACE POUR ESPACER LES NAISSANCES

Sept		Oct		Nov		Dec	
L	1	L	1	L	1	L	1
M	2	M	2	M	2	M	2
M	3	M	3	M	3	M	3
J	4	J	4	J	4	J	4
V	5	V	5	V	5	V	5
S	6	S	6	S	6	S	6
S	7	S	7	S	7	S	7
L	8	L	8	L	8	L	8
M	9	M	9	M	9	M	9
M	10	M	10	M	10	M	10
J	11	J	11	J	11	J	11
V	12	V	12	V	12	V	12
S	13	S	13	S	13	S	13
S	14	S	14	S	14	S	14
L	15	L	15	L	15	L	15
M	16	M	16	M	16	M	16
M	17	M	17	M	17	M	17
J	18	J	18	J	18	J	18
V	19	V	19	V	19	V	19
S	20	S	20	S	20	S	20
S	21	S	21	S	21	S	21
L	22	L	22	L	22	L	22
M	23	M	23	M	23	M	23
M	24	M	24	M	24	M	24
J	25	J	25	J	25	J	25
V	26	V	26	V	26	V	26
S	27	S	27	S	27	S	27
S	28	S	28	S	28	S	28
L	29	L	29	L	29	L	29
M	30	M	30	M	30	M	30
M	31	M	31	M	31	M	31

PRUDENCE Pour une meilleure Protection



COMMENT ATTRAPE-T-ON LE SIDA

Le virus du SIDA se transmet d'une personne infectée à une autre personne :

- 1° par l'usage de seringues et aiguilles contaminées
- 2° par la transfusion et greffes d'organes
- 3° par la voie maternelle c'est-à-dire de la mère infectée à son bébé pendant la grossesse ou l'accouchement
- 4° lors de rapports sexuels non protégés par l'utilisation correcte de préservatifs.

La contamination survient lorsque ces sécrétions sont en contact avec les muqueuses du partenaire sain (muqueuse buccale, génitale ou anale) d'où l'importance de l'efficacité de l'usage des préservatifs afin d'éviter ce contact avec les sécrétions infectantes.

CONSEILS : Mise à part la continence, la meilleure protection contre l'infection reste l'utilisation des préservatifs. Utiliser le préservatif «PRUDENCE» pour votre protection.

STOP SIDA EFFICACE POUR ESPACER LES NAISSANCES

The project employed consumer promotion activities such as “rapping” by disc jockeys and nightclub singers, condom-use demonstrations, and consumer giveaways. Peer educators were also used to reach prostitutes.

Program evaluation is planned involving KAP (knowledge, attitudes, practices) studies and a measure of changes in STD-prevalence rates among program participants.

After three months, more than 480,000 condoms were sold in over 70 pharmacies and 40 bars/hotels. Condom distribution provided coverage for an estimated 70% of the targeted group. Several hotels now include condoms along with the usual amenities normally provided in the rooms. Sales projections indicated that 1,800,000 condoms would be sold by June 1990.

LESSONS LEARNED AND KEY POINTS TO SUCCESS

This project emphasized two different approaches in reaching priority target groups: use of the private sector and emphasis on condom distribution. The program functioned like a private-sector commercial organization, holding to strict standards of client service, guaranteeing widespread condom distribution among both retailers (pharmacies, medical centers, hotels/bars) and pharmaceutical wholesalers who ensure coverage to other retail outlets. The condoms were donated by the Agency for International Development; revenue generated by condom sales covered the operation costs.

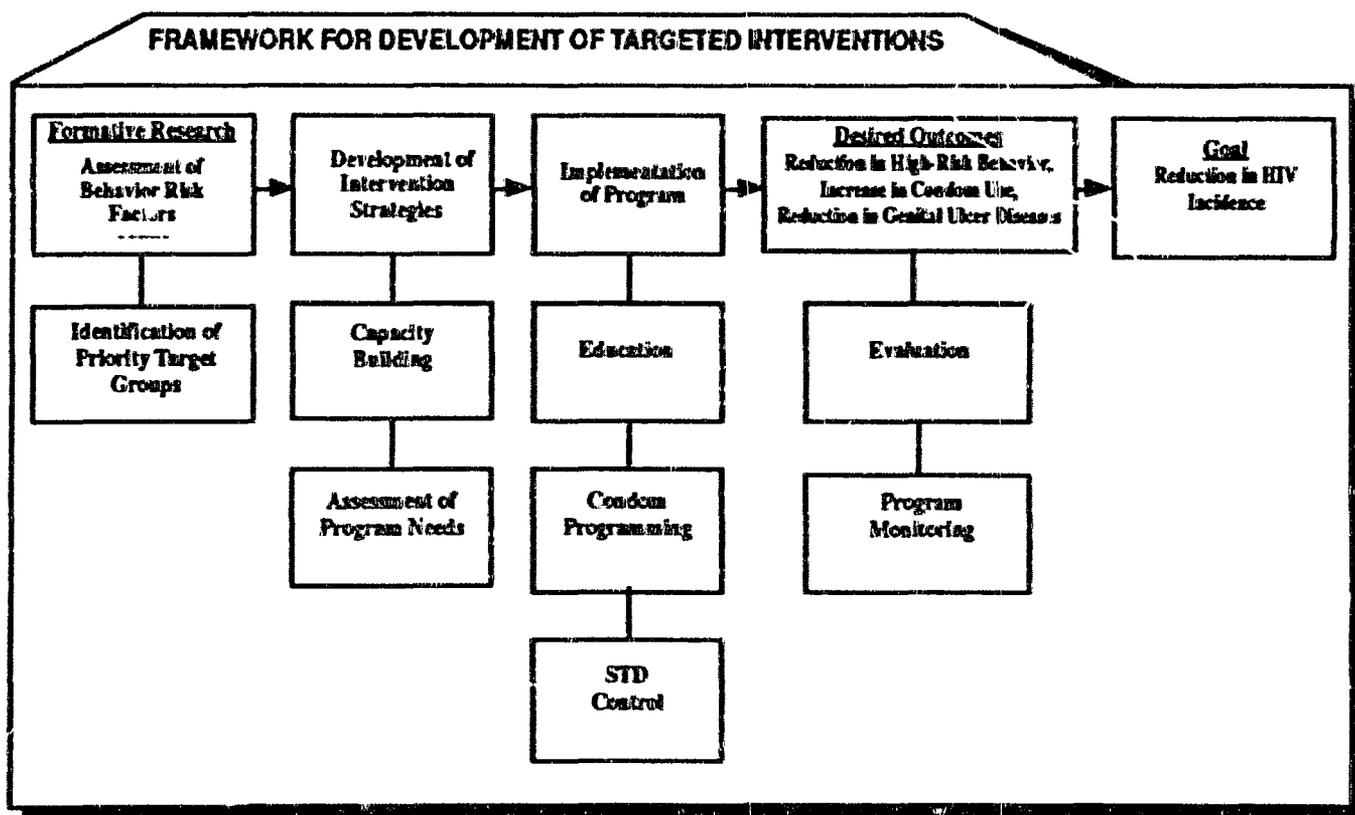
DEVELOPING A TARGETED INTERVENTION PROGRAM

New interventions need to incorporate the on-going shared experiences of existing interventions. Six components emerge which can be combined when starting a new initiative in a new country or region:

1. **Formative research** through focus-group discussions, ethnographic studies, or surveys which may be necessary if previous knowledge of the target group is minimal or nonexistent.
2. **An AIDS education component** targeted primarily to the priority target group with relevant information on how the individuals can change their behavior to reduce risk of infection.
3. **A condom distribution component** to provide access to affordable condoms.
4. **STD control and prevention** to reduce the additional risk of HIV infection associated with STDs that cause genital ulcers.
5. **Program monitoring and evaluation** to identify program strengths and weaknesses and to assess program impact.
6. **Capacity building** to ensure the sustainability of the program.

Each of these six components is outlined in more detail below. Taken together, they offer a comprehensive and integrated approach to the prevention of the sexual transmission of HIV infection and AIDS. Figure 8-12 summarizes the framework for development of targeted interventions.

FIGURE 8-12



Formative Research

The goal of formative research is to obtain information that will help design an appropriate intervention program.

The objectives of the formative research are to:

- identify any structures which already exist within the groups;**
- assess the target population's knowledge about STDs and AIDS;**
- understand the attitudes, sexual practices, and other behaviors that put these groups at risk of STDs and HIV infection;**
- study the social and economic aspects of prostitution;**
- study the clientele of prostitutes;**
- determine the ways of reaching these groups;**
- find ways of involving these groups in planning, designing, and implementing the intervention.**

A number of different strategies may be used to obtain the relevant information on the target population, including:

- knowledge, attitudes, beliefs and practices (KABP) surveys;**
- focus-group discussions;**
- ethnographic studies;**
- participant and nonparticipant observation.**

Formative research studies should be short, quick, relevant, confidential, and noninvasive. Only information that is relevant to the design and evaluation of the intervention should be collected. The danger of turning this into a large-scale questionnaire study with more than 100 questions is real and should be avoided. Information that has proved relevant and appropriate for the design of interventions includes:

- relevant demographic characteristics (e.g., education, languages, marital status, number of children, etc.);**
- sources of information about AIDS (e.g., friends, radio, television, etc.);**
- AIDS and STD knowledge (e.g., mode of transmission, methods of prevention, etc.);**
- psychosocial determinants of behavior (e.g., personal risk assessment);**
- social support (e.g., peer organization, support groups, etc.);**
- sexual practices;**
- protective behaviors (e.g., effective and ineffective behaviors);**
- STD history.**

An example of a simple questionnaire is shown in Figure 8-13 overleaf. When a program already exists in a region or a country, it may be possible to skip the formative research stage.

The Educational Component

AIDS EDUCATION

The goal of the educational component is to modify high-risk behavior in order to reduce the transmission of HIV.

The objectives of the educational component are to:

- inform the priority target group about AIDS and the modes of transmission within that community;**
- motivate the group to change their behavior in order to reduce their risk of infection;**
- motivate the group to use condoms correctly and consistently;**
- teach the group how to properly obtain, store, use, and dispose of condoms;**
- teach the group to recognize common symptoms of STDs and understand the importance of obtaining prompt treatment.**

Different strategies may be used to reach the priority target group, including:

- peer education;**
- existing infrastructures such as STD clinics.**

The peer education strategy features the identification and recruitment of natural leaders of the target group to be health educators and condom distributors to their peers. Where possible, existing organizations are used to identify leaders and to involve the target population in the planning and implementation of such programs.

Criteria for selection as a peer health educator include:

- acceptance by other members of the group;**
- concern for one's peers;**
- willingness to be trained and to work with the program;**
- being an opinion leader in the target group.**

Those selected are given special training in how to educate their peers and how to distribute condoms.

The effectiveness of peer health educators can be enhanced by other health education and condom distribution efforts. The following supportive interventions should be included whenever possible:

- Periodic community meetings led by peer health educators where dramatic presentations, condom demonstrations, and educational lectures can be given to a large group;**
- On-site AIDS education and condom distribution programs in places where prostitutes and clients are present, such as bars, nightclubs, and**

ID	<input type="text"/>
Site	<input type="text"/>
Interviewer	<input type="text"/>
Outcome	<input type="text"/>

BASELINE HEALTH SURVEY

The answers to this health survey will be used to develop health programs that might help you. Some of the questions are personal, but necessary in order to get useful information. Your answers will be completely confidential and your name will not be written anywhere on the questionnaire. Please make every effort to answer each question as honestly as possible. The interview should take about 15 minutes. If you have any questions, please ask the person administering this questionnaire.

For the following questions, please either circle the number next to your choice(s) or fill in the blanks as appropriate.

1. How old were you on your last birthday? Years
2. What is your sex?
 - 1 Male
 - 2 Female
3. How many years of schooling have you completed? Years
4. What is your employment status?
 - 1 self-employed
 - 2 regular full-time employee
 - 3 regular part-time employee
 - 4 not employed
5. In the past six months, how often have you traveled out of town?
 - 1 never
 - 2 less than once per month
 - 3 monthly
 - 4 weekly
7. How likely do you think you are of becoming infected with the AIDS virus?
 - 1 very likely
 - 2 likely
 - 3 unlikely
 - 4 very unlikely
8. Why do you think you might be likely/unlikely to become infected with the AIDS virus? (Give the one or two most important reasons.)
 - 1 _____
 - 2 _____
9. At what age did you first have sexual relations?
 - Age in Years 99 I have never had sexual relations.

The next few questions are about the AIDS virus. The AIDS virus is what infects a person and eventually causes a person to get AIDS.

6. Please read each of the following statements and circle:
 - 1 if you believe the statement is true
 - 2 if you believe the statement is false
 - 3 if you are unsure

	TRUE	FALSE	UNSURE
A person who looks healthy can be infected with the AIDS virus.	1	2	3
A person can get the AIDS virus through ordinary social contact like shaking hands with someone infected with the virus.	1	2	3
A pregnant woman who is infected with the AIDS virus can give the virus to her unborn child.	1	2	3
The AIDS virus can be transmitted by having sex with someone infected with the virus.	1	2	3
There is a cure for AIDS.	1	2	3
Using condoms helps prevent the sexual transmission of the AIDS virus.	1	2	3

10. Below is a list of sexual activities. Using the scale circle the number that best describes how often you have done each of the following activities in the past six months.

For example, you would circle 1 if you never did the activity;

circle a 2 if you did the activity less than once a month;
 circle a 3 if you did the activity monthly or more;
 circle a 4 if you did the activity weekly or more;
 circle a 5 if you did the activity daily.

	Never	Less than once a month	Monthly	Weekly	Daily
Vaginal intercourse	1	2	3	4	5
Had a man's penis in your mouth	1	2	3	4	5
Had a man's penis in your anus	1	2	3	4	5
MEN ONLY					
Put your penis in someone's mouth	1	2	3	4	5
Put your penis in someone's anus	1	2	3	4	5

11. Are you doing anything to protect yourself against AIDS?

- 1 yes
- 2 no (IF NO, GO TO QUESTION 13)

12. What are you doing to protect yourself against AIDS?

- 1 _____
- 2 _____

13. Please indicate whether you had sex with the following types of people in the past six months and how often you used a condom with each type of person.

	Sex?	Condom Use
Husband/Wife	No Yes ==>	If yes, how often? 1 never 2 less than half of the time 3 half of the time 4 more than half of the time but not always
Boy/girlfriend	No Yes==>	If yes, how often? 1 never 2 less than half of the time 3 half of the time 4 more than half of the time but not always
One time partner	No Yes==>	If yes, how often? 1 never 2 less than half of the time 3 half of the time 4 more than half of the time but not always

14. In total, how many different people have you had sex with in the past six months?

15. The last time you had sex did you and your partner use a condom?

- 1 No
 - 2 Yes --> Why? For pregnancy prevention?
 - 1 yes
 - 2 no
- For protection against sexually transmitted diseases and AIDS?
- 1 yes
 - 2 no
- Because your partner requested it?
- 1 yes
 - 2 no

16. Have you ever used a condom?

- 1 yes
- 2 no (IF NO, GO TO QUESTION 19)

17. Please indicate whether each of the following describes your experience with condoms in the past six months.

I did not usually use condoms with people I knew well.	Yes	No
We <u>often</u> did not have a condom when we needed one.	Yes	No
Condoms often broke when we were using them.	Yes	No
Sex was much less enjoyable.	Yes	No
Condoms were too expensive.	Yes	No
Condoms were too small.	Yes	No
Using a condom made me feel that I was taking action to avoid AIDS.	Yes	No
My partner and I used the same condom more than once.	Yes	No
I did not use condoms every time that I should have.	Yes	No
I had no problems using condoms.	Yes	No

18. Where have you obtained condoms during the last six months?

At a family planning clinic?	Yes	No
At a pharmacy?	Yes	No
At a bar or hotel?	Yes	No
At your home?	Yes	No

MEN ONLY QUESTIONS 19-21 _____

19. When was the last time you had burning when passing urine?
 Months Ago or Years Ago 99 Never

20. Do you feel that you have all of the information you need about AIDS?
 1 Yes
 2 No

21. When was the last time you had a sore on or near your penis?
 Months Ago or Years Ago 99 Never

MEN AND WOMEN

Thank you for taking the time to answer these questions.

22. Do you feel that you have all of the information you need about AIDS?
 1 yes
 2 no
 3 unsure

Do you have any questions about AIDS that you would like answered now?

- 1 _____
- 2 _____

Thank you for taking the time to answer these questions.

hotels. Workshops for hotel and bar managers can help to sensitize them to the danger of AIDS to their customers and employees and can help to develop employer-assisted AIDS prevention programs.

Infrastructure strategy features the use of current STD service providers, outreach workers, and contact tracers to educate individuals at risk of HIV infection as they come to the health facility for treatment of STDs. This strategy uses the available infrastructure to reach a variety of individuals at high risk of acquiring STDs, including HIV; it is particularly useful in countries where prostitutes are required to visit the STD clinic regularly.

Components of the STD clinic-based strategy include:

- improving the attitudes of STD clinic staff toward all clients, but especially toward prostitutes;
- educating health care providers about AIDS and how to promote condom use;
- training clinic staff to educate their clients to recognize symptoms of common STDs;
- developing educational materials for use in the STD clinic.

The STD clinic-based approach is being used in programs in Zimbabwe, Ghana, Zambia, Burkina Faso, Kenya, and Niger. Further information can be obtained from Chapters 5 and 9.

Condom Distribution Component

The goal of a condom distribution component is to increase condom accessibility, primarily to the priority target population and secondarily to the rest of the general population.

The objectives of the program are to:

- develop and implement a system to increase condom demand and use among the target group;
- implement a system that will provide easy access to affordable condoms for members of the target population;
- assure sustainability of condom distribution programs.

Priority target groups may be supplied with condoms through a variety of distribution strategies:

- peer health educators;
- trained STD clinic staff;
- employer-assisted work-site distribution programs;
- family planning providers;
- social marketing.

In each case, important issues must be resolved regarding the management and implementation of the condom distribution program, including:

- storage and distribution of condoms from a central storehouse to the STD clinic or health educator and to the prostitutes and their partners;**
- training of condom distributors;**
- coordination of education and condom distribution efforts;**
- monitoring of the number of condoms supplied to and distributed by each condom outlet;**
- ascertaining whether condoms will be sold, at what price, and by whom.**

It should be noted that even though health providers such as STD clinic staff and family planning workers can be trained to promote condom use and should have supplies of condoms available to provide to patients, these staff cannot be relied upon to be the sole supplier of condoms to members of high-risk groups, as they only see patients who come to the health clinics.

Condoms are the single most expensive component of AIDS intervention programs for prostitutes and their partners. Therefore, efforts must be made to recover at least part of the cost of the condoms, for example, through subsidies from employers, bar and hotel owners, or unions. Even if condoms are initially provided free of charge as part of a marketing strategy to increase demand, an effort should be made later to determine whether men and women are willing to pay for condoms and at what price.

In some programs, social marketing of condoms has been used to reach large segments of the high-risk groups and the general population. Social marketing distributes a branded product through established retail channels backed by professional advertising. The price is adjusted to subsidize use so that the maximum health benefits can be achieved.

STD Control and Prevention Program

The goal of the STD services component of a targeted intervention is to reduce STDs as a risk factor of transmission for individuals in the priority target groups.

The objectives of the STD component of the services program are to:

- improve STD prevention activities (e.g., health education and condom distribution);**
- improve diagnosis of STDs;**
- provide affordable treatment of STDs;**
- provide prevention counseling services.**

The strategy for accomplishing these objectives is to strengthen current programs at general health facilities or at designated STD clinics. Development of the program usually includes a needs assessment of the STD health facility in terms of supplies and equipment, training, educational programs, and counseling.

After the needs assessment, a plan is developed for implementing activities to meet the highest priority needs. Chapter 5 describes the control of STDs in more detail.

Program Monitoring and Evaluation

The objectives of program monitoring and evaluation are to:

- estimate program impact;
- identify program strengths and weaknesses;
- identify resources needed to sustain the program.

Monitoring and evaluating intervention programs must not be burdensome and should provide a meaningful and practical assessment of how well the program is meeting its objectives. The best indicator is a demonstrable decrease in HIV incidence that can be linked to the program. The ideal methodology is to follow cohorts of the target population exposed to the intervention, and a control group not exposed to the intervention; an estimate of the difference in HIV seroconversion rates could be compared over time.

However, this approach raises serious ethical, practical, financial, and logistical issues:

It requires a significant amount of data.

It is expensive, and particularly difficult to implement with highly mobile individuals such as prostitutes.

A lethal disease cannot be randomly allotted and the mere attempt to identify control cohorts may open the opportunity for some negative or counterproductive interventions.

Two other indicators have proved to be more practical and useful indicators of behavior change:

Changes in reported condom use. These changes are based on pre- and post-KAP surveys of prostitutes exposed to the intervention and, where possible, a control group. Activities necessary for implementation of KAP surveys include development of the survey protocol, pretesting the questionnaire, training interviewers, editing and coding questionnaires, preparing data for analysis, and analysis of data. Of course there may be a disparity between reported and actual condom use. Validation of reported condom use, where possible, is recommended.

Estimates of changes in STD incidence among the target population. This indicator is an objective and practical measure of program effectiveness. Programs may include baseline and follow-up examinations of a sample of men or women for evidence of selected STDs, such as gonorrhea, syphilis, and genital ulcer disease.

Clinic-based programs can be evaluated by means of pre- and post-program surveys of knowledge and attitudes among clinic staff and through monitoring STD clinic statistics on the number of patients seen, tests provided, condoms distributed, and women counseled.

Further information on evaluation may be obtained from Chapter 13 on Evaluation of AIDS Intervention.

Capacity Building

The goal of capacity building is to ensure that a targeted intervention program can be sustained both in terms of human and fiscal resources.

The objectives include the ability to:

- ensure appropriate infrastructure development to support the program;
- provide adequate training for program staff including technical and managerial skills;
- plan for the institutionalization of the program; and
- plan for financial sustainability.

The current availability of donor resources for AIDS programs has not encouraged adequate long-term planning for monitoring and supporting these programs. A country's Medium Term Plans (MTP) provide a good plan for the use of both donor and local resources. The issues which have not been adequately addressed by most National AIDS Control Programs include:

- projected costs of programs beyond the MTP;
- support for programs when donor assistance trails off;
- cost-recovery strategies;
- involvement in the private sector for intervention programs.

The development of infrastructure to support targeted intervention programs is critical for the maintenance of these relatively new activities. Pilot projects involving dedicated and motivated program staff and external donor support do not necessarily lead to infrastructure development. Allocation of space is essential, but brick and mortar development is expensive and should be kept to a minimum. Planning and purchase of essential equipment and supplies is critical. This may include basic diagnostic equipment for STDs, condom dispensing machines where appropriate, office equipment, and even a computer. Project managers should carefully plan the projected needs of the program and how these needs will be met.

An important component of capacity building is the training of staff. Targeted interventions for prostitutes and clients are relatively new. Most health personnel are not trained for it. Many may be uncomfortable or not interested, and some may even be opposed to it. Training should include:

- upgrading the knowledge of health personnel in biomedical facts about AIDS;
- upgrading skills in the diagnosis and treatment of STDs;

providing prevention counseling;

training staff in the management of programs.

The success of intervention programs depends on adequate training of community-based personnel such as peer educators, community volunteers, hotel and bar proprietors and managers. Technical assistance should be obtained if needed. Staff needs and training for a larger program should be carefully planned. Project managers should realize that managing a large, targeted intervention program is not a part-time job that can be combined with other work.

Most of the earlier targeted intervention projects were outside the formal health system, and were designed as operations research studies to test various approaches. However, to expand and sustain these intervention programs, they must be integrated into existing institutions. Support could come from the Ministry of Health or City Health Programs, the private sector, or community-based institutions:

The Bulawayo targeted intervention is an activity of the City Council.

The Cross River State Program is supported by the State AIDS Committee.

The Zaire condom distribution program is private sector based.

In all instances, close involvement with the National AIDS Control Program and the Ministry of Health is essential. Figure 8-14 on the following page lists some of the ongoing intervention programs in sub-Saharan Africa, together with the groups targeted and the applications used.

Planning for financial sustainability is critical if programs are to have a long-term impact on reducing HIV transmission. There are several ways of ensuring financial sustainability of such programs:

External donor support. This support is currently available but may not last forever. Some country programs may not survive without such support.

National or local government support. Continuing financial government support may wane as the epidemic worsens and government resources become stretched further.

Private sector involvement. This is one of the more promising avenues for resources. It includes the involvement of hotel/bar proprietors and owners, employer-supported workplace education, transportation workers' unions, and private sector social marketing of condoms.

Community-based support from organizations such as prostitute collectives. They are an invaluable resource and essential for the sustainability of these programs.

TARGETED INTERVENTION PROGRAMS IN SELECTED COUNTRIES*

Prostitutes' and Clients' Programs

Location	Target Population	Approach	Program Manager
Ouagadougou, Burkina Faso	Prostitutes Clients	Peer education; condom social marketing planned	Dr. Guy Yoda Division of Education for Health and Hygiene
Yaounde, Douala, Maroua, Cameroon	Prostitutes Clients	Peer education; condom social marketing	Dr. Marcel Mony-Lohe National AIDS Control Service
Mombasa, Kenya	Prostitutes Clients	Peer education; outreach to community women; STD clinic; bars/hotels	Dr. H. W. Waweru Coast Province STD/AIDS Committee
Nairobi, Kenya	Prostitutes Clients	Community-based; health workers	Mr. Mohamed Hanif Crescent Medical AID
Nairobi, Kenya	Truckers Partners	Peer education	Dr. David Nyamwaya AMREF/Kenya
Ramako, Mali	Prostitutes Clients	Peer education	Mme. Oumou Fofana Ministry of Public Health & Social Affairs
Calabar, Nigeria	Prostitutes Clients Proprietors	Peer education; hotel/bar proprietors	Dr. Eka Williams Cross River State AIDS Committee
Dar es Salaam, Tanzania	Truckers Partners	Peer education	Dr. Ulrich Laukamm-Josten AMREF/Tanzania
Goma, Matadi, Zaire	Prostitutes Clients	Condom social marketing	Mr. Carlos Ferreros Population Services International
Bulawayo, Zimbabwe	Prostitutes Clients Taxi drivers	Peer education; bar/hotel proprietors	Dr. Barnet Nyathi Bulawayo City Health Dept.
Ghana	Military personnel	General education; condom social marketing	Dr. Frank Apegyei

*AIDSTECH/Family Health International funded targeted AIDS Prevention Programs in Africa.

Some of the costs of AIDS intervention programs may have to be recovered from program beneficiaries:

Condoms constitute the most expensive component of the targeted intervention program. Partial or full recovery of the cost of the condoms should be explored.

Recovery of the costs of diagnosis and treatment of STDs is also a possibility. One should remember that in Africa most free health services are under-funded and of poor quality. Cost recovery is one way to improve services.

DISCUSSION

The AIDS epidemic has revealed the inadequacy of our knowledge of sexual practices and of the priority target groups. The urgency of the epidemic requires that:

- interventions be started immediately and monitored closely;
- programs be evaluated and modified based on new knowledge and lessons learned;
- relevant applied behavioral research be conducted to fill the gaps in our knowledge.

However, there are many questions that need answers. These include:

What is the extent and magnitude of multi-partnerism and prostitution in different cultures?

What is the extent of the social interaction between partners during sexual encounters and how does this affect the adoption of new behaviors?

What are the triggers to behavior change and how can behavior change be sustained?

How often is sex planned or impulsive and how do behavior-modifying drugs, such as alcohol, influence the client-prostitute interaction or learned behavior?

Condoms have become the mainstay of "safe sex" to prevent the transmission of HIV, but again, additional research and field experience are needed to answer questions such as:

How often do condoms tear or come off, and under what conditions?

What are the obstacles to correct and consistent condom use and how can they be overcome?

Can nonvaginal sexual exchanges be promoted in a specific culture?

Is there a straight-line relationship between the prevalence of condom use and slowing the spread of AIDS, or are there thresholds above which use must rise if condoms are to impact measurably on HIV spread?

These are only a few of the questions that need to be answered in order to design and implement intervention programs that will have the desired impact.

It has not been too difficult to identify the visible high-risk groups, such as prostitutes in a bar or nightclub, but major problems arise in reaching the submerged portion of the AIDS/HIV iceberg—women who have frequent and multiple partners for monetary rewards, but who do not consider themselves prostitutes. The problem is further compounded by the belief of politicians and law enforcers that prostitution can be prevented by periodic police raids, persecution of prostitutes, and the use of legal, bureaucratic, and moral grounds to discourage prostitution. Historical events have demonstrated how ineffective these approaches are.

Another major problem encountered in targeted intervention programs is the difficulty in reaching the clients and other partners of prostitutes. There have been a few separate programs designed to reach clients of prostitutes, such as interventions with truckers and the military; AIDS programs in the workplace; and social marketing programs targeted at clients of bars and nightclubs as well as the general population. Prostitution is an economic activity and the client has the economic power during the transaction. For prostitutes who work in brothels or proprietor-supported hotels and bars, a "condoms only" policy would help immensely.

This chapter has focused on targeted intervention for the primary risk groups of prostitutes and their clients; however, prevention of infection in the secondary-risk group of partners of prostitutes and their clients is an even more difficult task for a number of reasons:

These individuals are usually unaware of the high-risk behavior of their partners (or may refuse to admit it). As a consequence, they do not perceive themselves at risk from their partners.

Even those who are aware of their partners' risk behavior are often powerless to stop it or to request the partner to use a condom at home.

There is a tendency for men to label sex with a prostitute as relatively unsafe but sex with their regular partners as safe. It may therefore be difficult to convince such a man, who may already be infected, to practice safe sex with his spouse.

The situation is further complicated by the fact that in order for the man to practice safe sex with his spouse, he has to admit that he does now or has previously had other sexual partners.

Further research is required to understand interactions between the primary and secondary risk groups and to determine the best way to reach the secondary risk groups.

We suggest targeted interventions to high-risk groups as an important cost-effective strategy for reducing the sexual transmission of HIV in Africa. However, the public health response to the AIDS epidemic requires a comprehensive and integrated effort. Behavior-change messages to the general population are important in reinforcing the targeted messages. They are also important in order to avoid blame and scapegoating of the priority target group.

The WHO consultation on HIV epidemiology and prostitution in July 1989 made a number of important and relevant recommendations. It identified an urgent need to promote targeted

interventions for prostitutes and their clients; furthermore, the consultation made clear that such programs should involve the prostitutes in program planning, design, and implementation. The key recommendations were for governments to:

- acknowledge the presence of prostitution;
- support targeted interventions for prostitutes and clients;
- remove impediments to intervention programs, such as police harassment of prostitutes, arrest for possession of condoms, and imprisonment.

The WHO consultation also concluded there is an urgent need for:

psychosocial and behavioral research to increase our understanding of knowledge, attitudes, beliefs and practices associated with prostitution;

socioeconomic analysis of factors that affect prostitution and the ability of the prostitute to protect herself from infection. This should include an analysis of the:

- cost of condoms and of treatment of STDs;
- availability of alternative work for prostitutes;
- importance of sex industry to the national economy.

study of clients to include reasons for visiting prostitutes and client-prostitute interaction;

study of factors that influence HIV transmission;

ethically designed surveillance studies to monitor the changes in HIV seroprevalence in prostitutes, clients, and other nonpaying partners of prostitutes;

research on improving condom acceptability and use, especially among clients, as well as research on alternative barrier contraceptive methods.

Tragically, the economies of most countries in sub-Saharan Africa have been struggling for the past decade. Health programs have suffered because of the inadequacy of resources. The situation has been further compounded by the AIDS epidemic, which has required considerable human and fiscal resources both from national and international sources. The international response has been remarkable but inadequate to meet the needs of the AIDS epidemic. **To curb the further spread of HIV, policy-makers will have to make some important and drastic decisions regarding allocation of resources.**

If the initial programs have any validity, they will need to be replicated among all high-risk populations in sub-Saharan Africa. HIV among prostitutes often doubles in prevalence every 12 months; it is imperative that governments and the international community begin to plan on the necessary scale now. However ambitious such plans may appear, failure to act will certainly be more costly, and action on a piecemeal scale is likely to be largely ineffective.

The biggest obstacle to interventions with priority target groups has been the reluctance (and sometimes outright refusal) of decision-makers and program managers to approve

interventions to reach these high-risk groups. A couple of years ago, the senior author of this chapter visited a number of African countries in an attempt to develop projects to reach prostitutes and their clients. A few decision-makers with foresight were willing to try innovative programs to reach a target population that they had never before seriously considered. Some decision-makers refused, with the explanation that they had no prostitutes and therefore had no need for such a program. Others were simply afraid to touch a politically controversial issue.

It took nearly three decades to get decision-makers to understand and accept that excessive population growth is a detriment to development in African countries. The AIDS epidemic cannot afford even a single decade of procrastination. One example illustrates the need for action: when a sample of Nairobi prostitutes was first tested for HIV, seroprevalence was low (4%); a mere seven years later, virtually all tested prostitutes were HIV infected.

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COUNSELING AND AIDS

9

Dace Stone
Noerine Kaleeba

INTRODUCTION

HIV infection and AIDS have produced new types of health and social problems which disrupt families, communities, and societies. Few other diseases have demanded such medical and psychosocial support for the affected individuals and their families, friends, and other close associates.

Because knowledge about the HIV virus and the disease of AIDS is new and growing, it will challenge biomedical scientists for many years to come. A vaccine is unlikely in the near future. National AIDS control and prevention strategies must therefore continue to emphasize information, education, and counseling services designed to:

- encourage behavior modification for those who are HIV infected or at risk of infection;
- help those infected cope with their changing lifestyle;
- reduce the risks of HIV transmission within the general population.

Education and counseling approaches need to emphasize the care and integration of infected persons:

- within the context of their families and communities;**
- in a way that allows them to continue to live socially and economically productive lives.**

This is not an easy task, as AIDS almost always evokes initial public responses of fear and resentment. Moral disapproval is very noticeable, along with associated ideas of guilt and punishment. For those infected, ostracism and other forms of rejection emerge in the wake of fear, which adds to the already heavy stress of HIV infection and AIDS.

The response of decision-makers, as well as health and social workers, has been similarly rejective. As a result of personal fear and misinformation, they have been slow in responding to the psychosocial needs of infected individuals and their families.

Many people besides those who are infected or suffering from AIDS are affected by this epidemic. Indeed, no social group remains unaffected by the problem, and no individual can remain outside

the AIDS debate. There are broad social, economic, and political implications which have to be taken into account. The control and prevention of AIDS and HIV infection requires comprehensive medical, public health, and social interventions.

THE ROLE OF COUNSELING

What is Counseling?

Counseling is a process of dialogue and interaction between a counselor and a client, designed to:

- support the client at times of crises;
- encourage behavior change when necessary;
- help clients accept information and adapt to its consequences.

HIV infection and AIDS provoke conflicting feelings triggered by:

- the fear of contagion;
- the need for self-protection when it clashes with the need to express intimacy, physical closeness, and commitment.

Fear may also conflict with a person's ability to be compassionate or objective. This fear cannot be overcome by simply adding new knowledge to an existing conflict. **New knowledge alone can result in resistance and denial rather than new behaviors.**

Counseling helps resolve fear-based conflicts. With the resolution of conflict and the overcoming of barriers, new behaviors can be integrated. The role of counseling in facilitating the adoption of new behaviors is critical in that it provides a process of exchange in an environment that respects the individual. Counseling may take many forms in many settings. It can:

- occur individually or in groups;
- be done by professionals, trained volunteers, or paraprofessionals;
- focus on crisis intervention, on long-term problem solving, or on supporting long-term behavior change.

Counselors may work in health care settings, educational institutions, or community centers. In all forms and in all settings, counseling is a key ingredient for national AIDS control programs in checking the spread of HIV infection.

HIV/AIDS counseling exists on a continuum from prevention through treatment. In preventing the spread of HIV, counseling holds equal importance for:

- people at lower risk;
- those who are sero-negative;
- those already infected with HIV.

Counseling Meets a Variety of Needs

Counseling for HIV prevention and control meets a variety of needs based on the continuum of prevention through treatment. Counseling is a primary prevention tool because it provides sustained interaction, exchange, and dialogue about specific behaviors as an adjunct to education and information campaigns.

Counseling Strengthens National Information Campaigns

The goal of providing information and education on AIDS prevention and control is to modify high-risk behavior, thus reducing the risk of contracting or transmitting infection.

National information campaigns are strengthened when counseling helps to:

- ensure that people have accurate information and do not unduly fear the disease of AIDS or those who have it;
- support making media messages personal and compelling;
- reinforce condom promotion and behavior change by allowing people to explore these ideas confidentially.

Counselors, together with public health communication experts, need to design prevention messages that acknowledge the diversity of human failings as well as targeting high-risk behavior.

Counseling responds to needs of those with HIV

Counseling can provide support to a person who:

- is diagnosed with AIDS;
- tests HIV positive;
- is caring for people infected with HIV;
- has a family member affected by HIV infection or AIDS.

Many people need help in adjusting to the news that they have HIV infection. They often react with feelings of fear, anger, denial, isolation, helplessness, contamination, and loneliness. People need help in coping with stress caused by the loss of control in their lives — physically and financially as well as emotionally. Counseling is a means of meeting these needs for those who are infected and for their families. Counselors serve as a valuable source of information; they must, therefore, be aware of medical implications of HIV as well as outside resources which may influence clients and families.

Counseling Helps in Decision Making

Change occurs when individuals feel in control over their lives. Counseling helps people appraise their current situation, explore alternative courses of action, and build self-respect and confidence in their ability to act on decisions made. The role of counseling is to help ensure that these decisions are realistic and attainable. The decisions to be tested, to practice lower-risk behavior or to seek alternative treatment, are all personal and threatening. Counseling offers an opportunity for people to explore those feelings and gives them the opportunity to make their own decisions. The ability to make their own decisions empowers people toward accepting behavior change.

Pretest Counseling

Blood tests have been developed which detect the presence of antibodies to infection with HIV. Presence of antibodies is considered presumptive evidence of viral infection, although not all infected individuals have developed AIDS.

HIV antibody blood tests were initially designed to screen donated blood and blood products. There is now an increasing interest in the use of this test as both a diagnostic and medical screening tool as well as a means to initiate individual risk reduction efforts. **The growing interest in testing is offset by the extreme social and emotional consequences often associated with the testing process.** This has resulted in great debate over the benefits of testing.

Counseling for testing is an important element of a national AIDS prevention plan. Physicians and public health communications experts throughout the world have often called testing an "adjunct to counseling." In October 1987, the World Health Organization published "Guidelines for Screening and Testing." This is an important document for referral as National AIDS Committees design counseling and testing programs.

It is, however, vital that testing not be made a condition for counseling. **Individuals may decide not to be tested for any number of reasons:**

On the positive side, some may assess their personal risk and decide to practice safer behaviors without being tested.

On the negative side, other high-risk behavior individuals may fear asking directly for the test, but may donate blood in the hope of discovering their infection status. Donating blood in an attempt to secretly discover HIV status places the safety of the blood supply in jeopardy. All such attempts at testing must be strongly discouraged.

The health and safety of many persons may depend on the quality of testing information; individuals deserve accurate testing information, a stable environment in which to make their decision, and assurances that a decision to be tested will not result in recriminations.

PROVIDING TESTING INFORMATION AND ASSESSING THE INDIVIDUAL

People who are considering being tested for HIV infection need to be given information so they can make a well-informed decision on whether to take the test. The information must:

be up-to-date;

cover the technical aspects of testing;

explain the test's medical and social implications.

Counselors must assess the ability of a client to cope with the test result, whether positive or negative, and discuss this assessment with the client. A detailed medical and sexual-behavior history helps the counselor and the client assess together the risk of HIV infection. It may also indicate the test result to be expected. The history covers:

sexual practices;

self-infecting drug use;

blood transfusions received over the past ten years;

the use of blood products (especially in the case of persons with hemophilia);

exposure to non-sterile invasive procedures, which may include some circumcisions, and such cosmetic procedures as tattooing and scarification.

The assessment also determines the likelihood that the client is willing to make behavioral changes that would reduce the risk of infection and transmission.

Change in Behavior

Counselors raise the question of change in personal behavior during this initial assessment. In proposing change in behavior, it is important to give special attention to:

the client's cultural background;

recommendations on sexuality, pregnancy, or other aspects of personal behavior expressed in language that corresponds to local cultural norms and social attitudes toward sexuality and childbearing.

Counseling settings encourage this sensitivity to cultural norms by ensuring that counselors have received good training and "start where their clients are."

Certain subcultures encourage and help sustain high-risk behavior within a group. A member may find it difficult to decide to break away from an accepted pattern of behavior and will need careful and sensitive encouragement. **It is important for counselors to familiarize themselves with the self-help, medical, legal, and financial support available.** There is often an element of "social cost," when making a difficult decision. This social cost places the individual at risk of discrimination, ridicule, or ostracism by a peer group, friends, family, and others. Counselors must assess the individual's ability to deal with such difficulties.

Special Cases

Certain circumstances will require special attention:

High-risk women and pregnancy. Woman who engage in high-risk behavior and who become pregnant may need special counseling. The pregnant woman needs to be aware of the limitations of HIV testing as well as of its implications for continuing with a pregnancy. Her risk of exposure to HIV infection must be carefully assessed. A detailed medical and sexual-behavior history is imperative. Counseling also covers the use of contraceptives, alternative methods, and medical follow-up. If termination of pregnancy in an HIV-positive woman is to be considered, the law on abortion must be taken into account, as well as the availability of facilities for safe termination and the cost involved. Counselors need to have resources and follow-up available for these women.

Monogamy and testing. Couples who intend to establish a consistently monogamous relationship may wish to discontinue contraceptive or safer-sex measures, but may want to know whether or not they are HIV infected. Again, the implications of testing need to be made clear to them. Counseling must also focus on the possibility of discordant results between the couple, and how this information might affect their relationship.

Worried but well individuals. Individuals may request an HIV test although their medical and sexual history suggests low or negligible risk. They may repeatedly present themselves for testing or counseling. Care needs to be taken not to reject them or to confuse undue anxiety about health with real but unadmitted exposure to risk.

Discrimination and Testing

Many people will see being tested as a positive act which helps them change their behavior in an appropriate way. Nevertheless, the social or legal conditions governing testing may cause people to fear discrimination. They may be reluctant to accept testing or even to attend health facilities where testing is known to be carried out. In some countries testing facilities are being set up both within and outside the formal health care system. Often, anonymity and confidentiality can be better guaranteed outside the system. These services are designed to provide an alternative to HIV test facilities provided by blood banks. They are sometimes referred to as alternative test sites or centers.

Current testing procedures are not infallible; both false-positive and false-negative results are known to occur. The facts about testing should be made known to anyone considering being tested.

Given current policies in some countries, an HIV-positive result can have serious implications for employment, insurance, mortgages, housing and education. Pretest counseling needs to take these situations into account. Informed consent must include awareness of the implications of a test result.

The experience of being tested may motivate some people to change their behavior or to seriously consider doing so; others may seek to be tested because they wish to avoid infecting partners or loved ones. Counselors can encourage these forms of responsible behavior.

COUNSELING AFTER TESTING

Post-test counseling concerns often divide people into two categories:

- those who are HIV-infected (test positive);
- those people who test negative.

Counselors need to be aware of and knowledgeable about the range of feelings that are generated both prior to receiving test results and upon receipt of test results. It is of particular importance for:

- counselors to acknowledge that some clients experience serious doubts about receiving test results even after blood is drawn;

clients to know how long the waiting period is for test results, as a time frame will help prepare them for this difficult period.

Although receiving a positive test result certainly heightens concern over a number of issues, counselors need also to be concerned with those clients who test negative. Persons testing negative for the HIV antibody may experience intense guilt, anxiety, anger, or fear as readily as relief. Counselors can help all clients who receive test results by following these steps:

Help client fully understand the meaning of test results.

Assist client to emotionally integrate the impact of test results.

Help client prepare a health promotion plan.

Develop a plan for client best to handle the social ramifications of test results.

Clients will think through many complex issues during these steps. Counselor training programs need to prepare those doing counseling in the best ways to help clients integrate this information so behavior change takes place. Addressing the needs of client regarding antibody testing is an ongoing process and needs to be integrated into a counseling plan.

HIV INFECTION AND AIDS

At present, no one can tell an HIV-infected person how long it will take for AIDS to appear, or whether it will ever appear. A number of factors may hasten progression to AIDS — especially other illnesses and stresses, and possibly pregnancy. Absence of these factors may delay AIDS development.

It is important to make clear to clients that, until symptoms appear and illness begins, there is no reason why they cannot maintain socially and economically productive lives. However,

counseling must include emphasis on the individual's responsibility for changing behavior to limit the risk of transmission; and

clients need to understand that it is presumed they will remain infectious for life and that they may infect others perinatally, through sexual contact, by sharing needles and syringes, and by donating blood.

Counselors need to convey information on infection as carefully and sensitively as possible. How being infected is accepted depends on the person's character and circumstances, and on cultural attitudes to AIDS. The range of issues and problems that arise within counseling varies with the sociocultural context and the type of medical care and facilities available.

TRAINING OF COUNSELORS FOR HIV INFECTION AND AIDS

The increasing prevalence of HIV infection means that the counseling burden on health and social welfare systems is likely to grow. In some countries professional social workers with training in counseling are already available, although in limited numbers. In other countries, health workers are acquiring counseling skills in the course of their work. In general, however, counseling is a

new activity, and there is little or no opportunity to train counselors. AIDS prevention and control programs need to draw on all available resources to train counselors and provide counseling services. This means:

The use of non-professionally trained counselors along with health and social workers needs to be considered.

Wherever necessary, training programs need to be instituted to prepare new counselors or train existing counselors for their new functions in AIDS prevention and control.

In many communities, people with counseling talents are already counseling, in one form or another, people with HIV infection and AIDS. Such people might be brought into AIDS programs, and if necessary trained in special skills. At the same time, these people should be encouraged to share their own experiences and skills.

Attempts to mobilize counseling resources should also investigate the potential of:

educational and health-care institutions such as medical and nursing schools and health-care facilities;

social and community work agencies, family planning agencies, and mental health groups;

community leaders, civic leaders, religious leaders, self-help groups, and community action groups.

Some individuals within these groups and organizations are naturally more suitable than others as potential counselors.

The learning objectives of training programs will need to be derived from the tasks — and the difficulty or complexity of the tasks — which the trained counselor will be expected to perform.

Certain of these tasks will be relatively easy, such as:

providing accurate information and mobilizing psychosocial support for patients and their families.

Other tasks will be much more complex and difficult:

It will often be necessary to alternate or intersperse periods of training with periods of counseling service.

As far as possible, less experienced counselors will need to be assured of the support of more experienced counselor/supervisors to help them deal professionally with the complex feelings and problems of the more distressed and disturbed clients.

Less experienced counselors will need to have the support of more experienced counselors in order to deal with their own feelings and attitudes. The training objectives for specific skills needed by supervised counselors include the ability to:

- communicate information about AIDS in an accurate, consistent, and objective manner;**
- gain the trust of clients who need help with their psychological and social difficulties;**
- listen to people who are afraid, anxious, distressed, and possibly irresponsible and hostile;**
- understand clients' feelings, to accept these feelings and their expression without criticism or censure, and to respond to them in such a way that the clients can feel free to express themselves;**
- help clients understand their problems and those of the other people in their lives who are affected by these problems;**
- help clients reduce or resolve their problems.**

Like all skills, counseling skills can be acquired and developed only by practice. The core of all training programs must provide for adequate opportunities for trainee counselors to practice the necessary skills under supervision until they have reached the level of performance at which they can safely undertake the level of counseling expected.

The availability of skilled teacher/supervisors should first be assured. These persons may need to be the first group to be trained in the skills of teaching and supportive supervision as well as the skills of counseling in relation to HIV infection and AIDS.

Organizers of training programs will need to draw on educational expertise for curriculum planning and design in order to ensure that:

- learning objectives correspond closely with the tasks to be accomplished;**
- learning methods and materials are those most likely to achieve the objectives;**
- the students' learning objectives, the program's educational objectives, and the personnel meet the competency needs of the AIDS control program.**

Because counselors need to monitor their own feelings, there needs to be support to help them develop professionally and deal with the stresses of the work.

As noted above, people with counseling skills and potential can be found in a variety of professional and non-professional situations. There will be, however, a natural inclination to look within the health and social welfare sector, and seek out physicians, nurses, social workers, midwives, and community health workers. These professionals will often be in a position to counsel and support HIV-infected persons and persons with AIDS as part of their work. Many will

already be able to establish the necessary rapport for counseling. However, it must be remembered that these professionals may still need training.

It should never be assumed that someone working in health care or social welfare automatically has the skills, knowledge, and inclination to provide counseling support. Counselors need to be aware of their own feelings and how those feelings can affect counseling. This is especially important in the case of HIV infection.

Within any given community, members of voluntary groups, religious organizations, women's committees and people with HIV infection themselves are but a few of the additional possible sources for individuals who can become excellent counselors.

Whether or not the people who undertake counseling have had experience with HIV-infected people, they will have specific needs, including:

- some additional training;

- opportunities to air or discuss among themselves their stresses and anxieties in order to counter disappointment and depression;

- methods to sustain the energy and motivation which the work demands.

At all times it must be remembered that the demands of HIV and AIDS counseling are considerable. Persons who effectively take on this work need special recognition and consideration.

COMMUNITY-BASED MANAGEMENT OF AIDS

Virginia O'Dell
Benjamin Nkowane

INTRODUCTION

Health means more than the absence of illness, and it is influenced by more than physical and biologic factors. Social and environmental variables have a tremendous impact on both health and illness.

For health care to be adequate there must be emphasis on illness prevention and health promotion in addition to treatment.

For health care to be truly successful it must consider the influence of culture, and seek to work within its context.

We have been reminded of the need for this “holistic” approach to health care with the onset of the epidemic of HIV infection and AIDS. Until recently, however, most efforts directed at HIV have been focused on understanding the nature and extent of the infection. As a result, we now know:

- the approximate extent of infection;
- the course that HIV can be expected to run;
- the diseases HIV will produce.

We also know that AIDS is:

- a complex illness that will, in many places, produce social and economic hardships for whole communities;
- an illness for which no cure can be expected in the near future.

Increased efforts emphasizing prevention and care for HIV-infected people are now essential – even in those countries with a presently low HIV seroprevalence. Furthermore, increased cooperative efforts must continue to occur between national AIDS control programs and nongovernmental organizations. Based upon what we know, what directions should our efforts take to develop HIV and AIDS care and prevention programs?

COMMUNITY CARE

Given the nature of HIV infection and AIDS—and the significance of social and environmental variables—it is important that our efforts include a strong community component.

Primary Health Care

Primary Health Care (PHC) is the model of care accepted throughout Africa. PHC is essential health care made accessible at a cost the country and community can afford, with methods that are practical, scientifically sound, and socially acceptable. Requirements of PHC include community access to health services and community education on prevalent health problems. PHC is composed of services which may include the following.

Community Clinics

With the institution of PHC during the last decade health services in many developing countries have been somewhat decentralized. Semi-autonomous clinics have been established in both urban and rural settings. Recent economic hardships in many African countries have resulted in some clinics now operating with limited supplies and staff. While some are inadequately staffed, others retain a full complement of health workers. These health workers could be involved in HIV interventions and in providing care to people with AIDS.

Staff in community clinics may be involved in a variety of HIV and AIDS care and prevention activities which require little in the way of costly or scarce material support. Examples include:

- education in communities;**
- counseling;**
- providing supportive home care services.**

Home Care Services

In conjunction with community clinics, appropriate care can be provided to people with HIV infection in their homes. The philosophy of providing home care can be summarized as follows:

AIDS threatens the provision of adequate health care services by usurping an ever-greater proportion of limited health care resources. Shortages of staff, beds, medicines, and supplies may result in overcrowding and misuse of personnel and resources when people with HIV infection are unnecessarily hospitalized.

Hospital care is not always advantageous for people with AIDS. "Caring" cannot often be provided in overcrowded, understaffed hospitals.

The role of the extended family among many cultural groups in Africa fosters a willingness to care for family members at home. Therefore, home care is a valuable alternative to hospitalization.

Home services provide access to people who, for reasons of limited mobility or lack of transportation, would otherwise be without regular health care.

Home care provides access to the family and community, allowing for preventative and educative measures directed toward the non-infected as well as support for HIV-infected persons.

Hospital Services as Part of Community Care

Within the scope of community-based care, treatment-oriented hospital services are sometimes required. Many of the opportunistic infections occurring during HIV infection can be treated, although some require diligent evaluation and follow-up. **While cure of HIV infection is presently not possible, the quality and duration of life can be significantly improved by appropriate treatment.**

Counseling in Community-Based Care

AIDS-related counseling has two specific aims:

- prevention of HIV infection;
- support of those already infected.

Counseling may be directed at the individual, family, or community. It may be provided at home, in the clinic, or in the hospital. In all these settings and for all these groups, multiple messages need to be conveyed:

- what HIV infection is – and what it means;
- the ways in which HIV infection is passed on (with particular emphasis on sexual and perinatal transmission);
- how a person can remain uninfected;
- how someone can prevent spreading the infection;
- why partners should be informed about HIV infection;
- how HIV infection is not transmitted.

For all concerned, this information must:

- be made relevant to each individual's situation;
- facilitate the understanding that it is the responsibility of each of us to prevent HIV infection;
- offer support to those already infected.

Without appropriate counseling, the spread of HIV infection will not be abated and HIV-seropositive people will not receive proper care. Counseling requires personnel with specific skills and the time to utilize those skills. However, **counseling is something which is potentially available to all health care personnel, as well as lay personnel:**

Community health workers will need to be taught about caring for people with HIV infection and disease. The impact of HIV infection in many countries will necessitate this; health care professionals alone will not be able to provide the care for all who will require it.

Family members, in addition to serving as members of the home care "team," will, in a sense, serve as community health workers, educating others in their community about HIV infection.

Utilizing a Mix of Services to Provide Optimum Care

The benefits of providing a combination of hospital, clinic, and home care services include the following:

Patient Comfort. In addition to the potential financial benefits of home care, it is important to ask, “What is best for the patient?” In the instance of HIV infection it is necessary to look at what hospitalization can and cannot offer:

In the early stages of illness many treatable infections may be encountered that require hospitalization and frequent clinic visits.

In the more advanced stages of AIDS, however, there can be little hope of successfully combating recurrent infections or halting the progression to the final stages and eventually death. Vigorous attempts to do so are seldom indicated and often serve only to prolong a person’s suffering.

At advanced stages, supportive home care services are clearly advantageous. In most instances, patients can be cared for more comfortably—and lovingly—at home. **Whether a person is in the early stages of HIV infection or in the terminal stages of AIDS, a supportive relationship can be developed with both the infected person and family.**

When patients are offered supportive care in the home, many will choose this over hospital services. In one rural community served by a mission hospital in Zambia, 95% of patients offered home visits preferred this to reporting back to the hospital.¹

Educational Benefits. In situations where diagnosis and treatment are limited by available resources, home care services can become advantageous early during infection. By offering an HIV-seropositive person the benefits of home care, the process of preparing the family to care for the person at home is begun. Educational preparation should include the following facts:

HIV-infected people may look perfectly healthy—and often do for some time—despite the fact that they have a serious infection.

People with HIV infection and AIDS need not be avoided. The infection is not casually transmissible, and infected persons need the support and love of their family and friends.

When one family member has HIV infection, there are implications for the entire family.

By caring for ailing relatives at home, people will learn what HIV infection and AIDS really are.

Access to Health Care. Transportation to health care facilities is hard to come by in Africa. Services available at home or in a community clinic can be more accessible.

Effective Utilization of Community Resources. The family can be regarded as a national resource in many places¹ and should be included as a valuable component of community-based care. Without the family’s support, patients cannot be adequately cared for at home. With the

family's support, home care becomes a viable alternative to hospitalization. In addition to family members, other members of a patient's community may be able to provide assistance:

Women's organizations and church groups may be able to provide practical assistance.

Communities may be able to start income-generating projects to sustain those individuals who are able to work on a part-time basis. (In Uganda, the AIDS service organization, TASO, has successfully started such a project in Kampala.)

Financial Benefits. Early in the AIDS epidemic in the United States and Europe, home care became an integral part of the services needed by HIV-infected people. A recent review of the financial aspects of HIV care in developed countries suggests that using a mix of home services, clinic visits, and hospitalization results in lowered costs.²

Home care programs now exist in Africa in both Uganda (Kitovu Mission Hospital in Masaka, and Mengo and Nsambya Hospitals in Kampala) and Zambia (the Lusaka home care team is part of the Chikankata AIDS care unit). Although comparison of hospital and home care costs have not yet been made in detail for programs in Africa, the overall impression is that home care results in savings. As one group of researchers noted, "Home care is not inexpensive but it should be compared with the [hospital] costs of patients who are terminally ill."³

In addition to utilizing hospital resources and beds more effectively, home care educates the family and community. Although the long-term financial benefits of education are difficult to calculate, it is nonetheless a decidedly valuable component of community-based services.

SYMPTOMATIC CARE OF HIV-RELATED ILLNESSES

Figures 10-1 and 10-2 on the next pages look at:

what symptoms are commonly experienced by people with HIV-related disease;

the level of care that can be provided in all settings;

which medicines and supplies are necessary to provide basic care to people with HIV-related illnesses.

FIGURE 10-1

**SYMPTOMATIC CARE OF
HIV-RELATED ILLNESSES**

SYMPTOM	CARE	MEDICINES AND SUPPLIES
Oral discomfort/dysphagia	<p>for candidiasis: normal saline rinses</p> <p>for poor nutrition: soft diet</p> <p>for Kaposi's sarcoma (KS): refer for treatment if chemotherapy available and condition not terminal; for general hygiene: normal saline rinses</p>	<p>gentian violet rinses, nystatin or ketoconazole</p> <p>vitamins B, C; multivitamins</p>
Cough/dyspnea/chest pain	<p>work-up and treatment for TB, other pulmonary infections or KS, or empirical treatment; followed by emotional support</p>	<p>co-trimoxazole or penicillin</p> <p>cough mixture, codeine, liquid morphine (if severe)</p>
Diarrhea	<p>work-up and treatment for treatable infections or empirical treatment; skin care; dietary changes; ORS/fluid replacement</p>	<p>cotrimoxazole or metronidazole; for empirical treatment, Lomotil followed by: codeine, dietary potassium</p>
Weight loss	<p>nutritional support; skin care</p>	
Vomiting	<p>work-up, followed by ORS/fluid replacement; oral care</p>	<p>antiemetics</p>
Pain	<p>instruction to family in providing comfort measures; for abdominal pain: dietary changes</p>	<p>aspirin/paracetamol, indomethacin, codeine, liquid morphine, antacids</p>
Immobility/weakness	<p>family education to provide: assistance with daily activities, skin care, nutritional support</p>	<p>crutches or wheelchair</p>

FIGURE 10-1 (cont'd)

**SYMPTOMATIC CARE OF
HIV-RELATED ILLNESSES (cont'd)**

SYMPTOM	CARE	MEDICINES AND SUPPLIES
Fever/night sweats	work-up and treatment for infection, followed by comfort measures (cool baths, fluids)	aspirin/paracetamol
Rash/skin lesion	work-up for treatable infections, followed by cleansing, application of saline soaks and dressings for discharging wounds	topical antifungals, topical hydrocortisone, antibiotics, antihistamine, analgesics
Edema	elevate affected extremities, cool compresses, pain relief, skin care	mild diuretic as indicated
Genitourinary infections, dysuria, hematuria, viral warts (for empirical genital wart treatment), buboes	work-up, followed by empirical treatments, comfort measures, patient education	antibiotics, analgesics
Depression/anxiety	provide emotional and spiritual support; ensure patient receives counseling and pastoral care services	
Insomnia	emotional support	mild sedatives, if indicated
Sensory/mental status changes, blindness, loss of vision, confusion, headache, personality changes, depression, parasthesias	work-up and treatment of treatable infections (cryptococcal or TB meningitis, toxoplasmosis, herpes zoster, etc.) in hospital or clinic, if treatment available; followed by safety precautions, pain relief, family education, emotional support	mild sedative
Drug reactions, skin reactions, diarrhea, deafness, loss of vision	symptomatic care as above	discontinuation of all medications and referral for evaluation if reaction severe

**FIGURE 10-2
SUGGESTED SUPPLIES AND MEDICINES FOR HOME CARE PROGRAMS**

Medicines*

1 Analgesics: paracetamol, aspirin, indomethacin, codeine, liquid morphine	2 Antitussives: cough syrup preparation, codeine	3 Vitamins: multivitamins, iron, vitamins B and C	4 Broad spectrum antibiotics: tetracycline, ampicillin, co-trimoxazole, erythromycin
5 Topical disinfectant: gentian violet	6 Antifungals: nystatin troches, ketoconazole	7 Antidiarrheics: lomotil, immodium, codeine	8 Oral rehydration salts (or sugar and salt for homemade preparation)
9 Antimagnetic: promethazine	10 Topical antifungal: miconazole cream	11 Topical anti-inflammatories: hydrocortisone cream	12 Antiamoebic: metronidazole Antimalarial: chloroquine
13 Antituberculosis: thiacetazone and isoniazid (for long-term treatment after initial 2- month multi-drug regime)	14 Sedative: diazepam	15 Diuretic: furosemide	16 Antacids: aluminum hydroxide, magnesium hydroxide

Supplies*

1 Bedpans, urinals, incontinence sheets	2 soap, washing detergents, liquid bleach	3 condoms
4 gloves	5 bandages	6 syringes and needles
7 crutches, wheelchairs	8 disinfectant: iodine	9 milk powder

*Those drugs and supplies most frequently used are indicated in bold type.

Approaches to community care will vary from place to place depending on a number of factors:

- locale (urban versus rural settings);
- existing services;
- availability of personnel.

One country in which community-based programs have been successfully established is Zambia. The following descriptions are provided to illustrate two of these programs.

THE CHIKANKATA APPROACH

Chikankata Hospital lies in the southern province of Zambia and serves a rural population of about 100,000. The AIDS care and prevention unit at Chikankata is unique for two reasons:

- It is committed to utilizing an approach of “integrated management”;
- It uses a variety of disciplines for the provision of community counseling.

At Chikankata the AIDS care and prevention unit was established on the basis of certain assumptions:

- Home-based care is the key strategy to decentralization.
- The family is the greatest strength in rural Zambia.
- Patients prefer to die at home.
- People learn by talking.
- Care must be provided in the community for a genuine understanding of the illness to occur.
- Caring will influence acceptance in the community.

In addition to these assumptions, the Chikankata approach recognizes the family as the unit for responsibility. The family is capable of providing the impetus for behavior change and sharing responsibility for the care of ill family members with the hospital.

Integrated AIDS Management. The medical management policy at Chikankata has always been multi-disciplinary and has provided community-based approaches to care. The approach adopted for working with HIV infection and AIDS incorporates a variety of disciplines in order to provide the comprehensive services required for care and prevention. The AIDS care and prevention team includes seven units:

- clinical and home-based care;
- counseling;
- education;
- ward management and training of AIDS health promotion workers;

administration and research;
pastoral care;
AIDS management training.

The above seven units are considered essential to the care and prevention of HIV infection.

The AIDS management team at Chikankata incorporates professionals from a variety of disciplines. The home care team, which varies with the needs of the patients, families, and communities being visited, comprises four or five people: a social worker, a clinical officer, a health educator, a nurse, and a school educator. Team members provide pastoral care in addition to their other roles.

Chikankata's twin belief in the family and the community as key components to AIDS prevention and care has resulted in the establishment of a unique counseling program. Members of the team travel to surrounding villages to meet with community leaders (and sometimes whole communities) to discuss HIV and AIDS. Community members are encouraged to identify what they perceive as problems and to formulate community solutions. It is the philosophy of the program that this approach will lead to a greater degree of behavior change than when individuals alone are counseled. Future plans at Chikankata include the building of a "special care" ward and counseling center to look after HIV-infected people and their families. This will be the starting point for family and hospital cooperation and will provide better hospital care when it is needed. AIDS care and management seminars are held to enable others to learn from the approach adopted at Chikankata. Further research will become increasingly important in order to validate the Chikankata experiences, making them relevant not only for other Zambian but other African communities as well.

THE LUSAKA AIDS HOME CARE AND PREVENTION PROJECT

The home care team, based at the university teaching hospital in Lusaka, was initiated in 1987 in the realization that many HIV-infected people and their families were in need of home visits. The initiation of the program was influenced by the successful home visiting under way at Chikankata and at Nsambya Hospital in Kampala, Uganda. All of the patients seen by the home care team are referred by doctors based at the university teaching hospital. Many continue to be seen in hospital clinics or at the community clinics, in addition to being visited at home; others are seen only by members of the home care team.

The home care team consists of: four nurses, one clinical officer, one counseling and records assistant, one driver, one office orderly/messenger, and one doctor (who functions in a supervisory capacity).

One of the nurses acts as "team leader," carrying out additional administrative duties and coordinating the team's work. The team has a base office supplied by the university teaching hospital. The hospital also supports the team by releasing three staff members (two nurses and the clinical officer) to work with the home care team on a part-time basis.

The Lusaka home care team will be working closely with nurses in one or two of the community clinics in the near future. It is expected that home visiting will then be done by some of the

community health nurses, alleviating some transportation needs. The team members based at the university hospital would then serve more as resources, rather than as primary care givers.

DEVELOPING COMMUNITY-BASED PROGRAMS: THE QUESTION OF VERTICAL VERSUS HORIZONTAL STRUCTURES

Controversy exists as to whether AIDS care and prevention programs should be developed:

horizontally, with active participation from various segments of the community;

OR

vertically, with care givers being assigned roles and following rigidly defined orders.

The brief history of AIDS control programs and the response of many NGOs (non-governmental organizations) has generally seen AIDS care develop vertically. This has occurred in part because of the need for a rapid response in an area in which expertise was not widespread. The approach taken should depend on the circumstances where AIDS care and prevention are needed. Where health care structures exist and are functioning, AIDS care and prevention programs can be added, thus constituting horizontal development. Where no health care programs exist, a more vertical approach may be necessary initially. In the end the programs provided will need to achieve the same goals. In all instances HIV infection will need to be kept in the perspective of the entire context of a community's problems. AIDS care and prevention programs should be an integrated response.

CONCLUSION

Few families will reject the idea of caring for their family members at home when the option is presented positively, rather than as abandonment by the health care system.

Returning to the question of what is best for the patient we can ask:

What does the patient—and family—want?

What is best for the community as a whole?

Given the debilitating and irreversible nature of AIDS, it is not surprising that many patients and families prefer to be visited at home—provided adequate home care is available. As for what is best for the community, it is clear that programs are urgently needed that provide compassion and education while conserving limited resources.

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AIDS PREVENTION IN FAMILY PLANNING PROGRAMS

11

Nancy E. Williamson
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INTRODUCTION

Slowing the spread of HIV infection will require that all available infrastructures be used for:

- public education;
- condom distribution;
- STD control;
- AIDS prevention counseling.

Potentially helpful infrastructures are family planning programs, whether they are horizontally integrated into maternal and child health programs or vertically organized. This chapter:

- discusses both the limitations and potential contributions of family planning programs in sub-Saharan Africa;
- gives examples of family planning programs in Africa which might add AIDS prevention activities;
- lists inputs that will be required if family planning programs are to make a significant contribution to AIDS prevention in Africa.

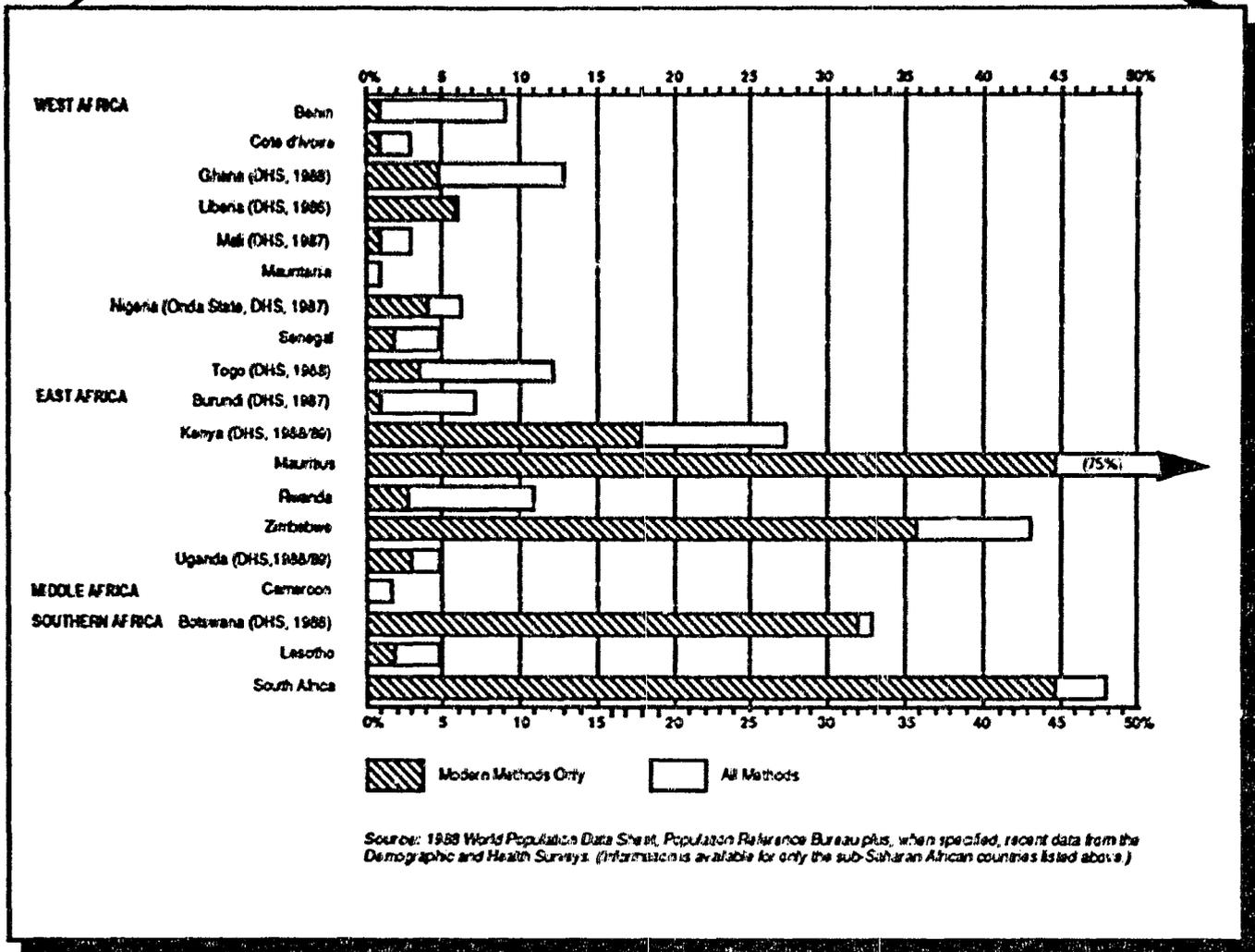
LIMITATIONS OF AFRICAN FAMILY PLANNING PROGRAMS REGARDING AIDS PREVENTION

Few African countries have well-developed family planning programs that are able to provide services throughout the population. Hence, we cannot expect family planning programs to be the primary structures to fight AIDS in Africa. Health, education, and public communications structures will probably play a larger role.

Family planning programs in Africa often serve only a limited segment of the population (e.g., married women in more urban areas) and may offer a limited number of family planning methods. This in part reflects the lack of family planning services. The use of modern contraceptives is low in most countries south of the Sahara with the exception of Zimbabwe, Botswana, and Kenya. (Figure 11-1 on the next page presents data on contraceptive use patterns in Africa.) Unfortunately, countries with high HIV seroprevalence rates (such as Uganda, Tanzania, and Malawi) tend to have weak family planning programs to which AIDS prevention activities might be added.

FIGURE 11-1

PERCENT OF MARRIED WOMEN USING CONTRACEPTION IN SUB-SAHARAN AFRICA



Family planning programs in Africa have several other limitations:

limited access to men and to population groups at particularly high risk of infection (e.g., prostitutes, young single people with multiple partners).

In theory, family planning programs might be well positioned to provide crucial AIDS prevention counseling by building on family planning counseling; in practice, family planning programs do not provide much counseling although they recognize the need for it.

Although the condom is the only family planning method that can protect against AIDS, few family planning programs have aggressively promoted its use. African programs typically favor hormonal methods such as pills or injectables. Condoms are often thought of as relatively ineffective by both providers and clients.

Although family planning programs deal with reproductive health issues, they seldom have had to deal as explicitly with sexual behavior as is required for AIDS prevention.

These limitations are not only found in African family planning programs. They tend to be characteristic of family planning programs around the world. Moreover, such limitations can be overcome, and condoms can be promoted through family planning in order to facilitate the prevention of AIDS. For example, the National Family Planning Program in Zimbabwe was one of the programs caught in the dilemma of having taught clients that the condom represented an ineffective method of family planning. In the face of the AIDS pandemic, however, their approach was revised. The condom is now aggressively promoted through the Zimbabwe National Family Planning Program. The use of condoms increased from 3% to 26% between the 1984 Reproductive Health Survey and the 1988 Demographic and Health Survey.

POTENTIAL CONTRIBUTIONS OF FAMILY PLANNING PROGRAMS

Despite the above limitations, the potential contributions of family planning programs to AIDS prevention should not be ignored. For a relatively modest cost, AIDS prevention activities can be added to family planning programs. Examples of these contributions include:

Producing, adapting, and pretesting educational materials needed for AIDS prevention. Many family planning programs have experience developing educational materials in a related area of human behavior, such as contraception. This experience could be beneficial in adapting materials for AIDS prevention.

Distributing educational material on AIDS. AIDS information can be added to on-going family planning IEC (Information, Education, and Communication) activities. Outreach workers or clinical staff who distribute information on family planning methods can also disseminate information on AIDS. Film shows on family planning can add films on AIDS prevention. Many family planning programs have experience in disseminating information (including research findings) through the mass media, seminars, and newsletters.

Identifying couples in which either partner is at risk of HIV infection. Risk counseling is an important part of AIDS prevention. If an individual is at risk of HIV infection, he/she will need to be advised to avoid risk behaviors and use condoms, regardless of what other contraceptive is chosen. Most family planning workers have had some training in contraceptive risk assessment counseling; this could be helpful in assessing risk for HIV infection. For example, in clinical settings, workers already administer checklists for oral contraceptives and sometimes IUDs to identify women who can safely use these methods. These same workers could be trained to do AIDS risk assessments. A checklist (see Figure 11-2 for an example) could be adapted to identify those:

at risk of HIV infection who should be urged to refrain from risky behaviors;

who need to use condoms instead of, or in addition to, other family planning methods.

Currently, this kind of risk assessment is done on an ad hoc and unstandardized basis. Much work remains in developing risk assessment procedures, training staff in these procedures, and integrating them into routine family planning services.

Helping couples of whom one or both partners are infected to make contraceptive choices and consider whether to have a child.

Counseling may be very difficult if one (or both) partner wants more children but is at risk of having an infected child. This situation will require well-informed and sensitive counselors, reinforcing the need for AIDS-specific counseling training for family planning workers.

Providing condom logistics. Family planning programs already order, store, and distribute condoms and instruct clients on their use. These efforts could be expanded, in some cases through community-based distribution programs or through social marketing (ie, subsidized socially beneficial products distributed through commercial channels) as well as through clinics.

Providing an outlet for the diagnosis, treatment, and prevention of sexually transmitted diseases (STDs) through referral or direct services. This is a new area for most family planning programs but one which will probably receive increasing emphasis as the epidemic of STDs spreads.

Supporting and contributing to research and evaluation. Most family planning organizations have some experience with research and could be a valuable resource to AIDS prevention programs. For example, family planning programs could study sexual beliefs and practices relevant to HIV transmission and conduct condom acceptability studies. Family planning organizations in Zimbabwe, Nigeria, Liberia, and Gambia have conducted surveys of adolescent fertility, contraceptive use, and rate of STDs. These surveys could be adapted and replicated to focus on AIDS risk factors and AIDS knowledge, attitudes, and practices among young people. Family planning programs can also evaluate which kinds of condoms are preferred locally.

Disseminating information (including research findings) through the mass media, seminars, and papers. Family planning programs have established networks of mixed audiences and multiple channels for information dissemination. Examples include person-to-person communication and counseling, group education and counseling at clinics, and the use of findings from research to develop educational materials for target groups.

In addition, family planning managers may be familiar with evaluation procedures and with record keeping and management information systems which might be useful for AIDS prevention programs.

A number of African countries have innovative family planning projects to which AIDS prevention activities could be added. Examples include:

Nigeria: market women projects; family planning programs with industrial workers;

Ghana: social marketing of condoms; "Daddy Clubs" (social, church-related clubs that provide information to fathers so that they can be good teachers to their children);

Zimbabwe: a community-based distribution program; Youth Advisory Services which deliver parent education programs to parents and youth and family life education to youth;

Kenya: family planning clinical services at each administrative level; family life education programs; community-based distribution and other family planning distribution systems including several small social marketing initiatives and industrial-based family planning programs;

Botswana: good health infrastructure including maternal and child health and family planning services;

Zaire: a community-based distribution program.

Other countries including Cameroon, Tanzania, Uganda, and Burkina Faso are either initiating or considering social marketing projects to expand condom distribution.

Activities that could be added to on-going family planning projects include:

training family planning workers on AIDS;

producing and distributing IEC materials on AIDS;

information on risk prevention and risk behaviors;

expanding condom distribution;

expanding counseling (including HIV risk assessment);

conducting research on AIDS KAP (Knowledge, Attitudes, and Practices);

disseminating research findings on AIDS.

INPUTS REQUIRED FOR FAMILY PLANNING PROGRAMS TO MAKE A DIFFERENCE

If family planning programs are to make a significant impact on the AIDS problem in Africa, more resources must be made available to them.

Funding is required for educational materials, training of staff, transportation, communications, and additional staff.

Technical assistance will also be needed to help family planning programs integrate AIDS information into all of their activities, including clinical procedures.

Staff will need training in following universal clinical precautions to prevent infection of themselves and their clients, in counseling, and in eliciting information needed to assess risk of HIV infection. (Figure 11-2, overleaf, gives an example of a risk assessment form that could be adapted for local use.)

Family planning programs could play a more active role in STD issues. Family planning workers generally come across several STD cases daily during routine client examination. Because of the role of STDs in the spread of HIV infection, family planning workers could expand their role by developing skills for diagnosis, counseling, and treatment of STDs. For this to be effective, family planning clinics would need to be provided with the necessary support systems.

Separate materials will need to be developed for counselors. Several traditional sexual and health-related practices are still being practiced in some African communities which encourage the spread of HIV infection. African research workers need to conduct sociocultural studies through focus group research to collect relevant and reliable data; this can be used to develop appropriate materials to support the work of those directly involved in counseling on the grass-roots level.

In order to increase their overall contribution and involvement in AIDS prevention, family planning programs need representation on policy-making commissions or subcommittees responsible for planning a country's response to AIDS.

Strong leadership by family planning organizations themselves will be required if they are to play a significant role. Fortunately, some family planning leaders are uniquely qualified for such a leadership role, having dealt with controversial issues during their professional careers. To improve leadership skills, regional or in-country seminars could be held for family planning directors and managers to discuss how family planning can get more involved in AIDS prevention without jeopardizing their current activities.

CONCLUSION

Family planning programs are not well developed in most of sub-Saharan Africa. Some countries with serious AIDS problems have virtually no family planning infrastructure. Thus, family planning programs cannot be the backbone of AIDS prevention programs in Africa.

Nevertheless, there are a number of specific contributions family planning organizations can make. These contributions will take place only if:

- family planning programs receive additional funding and technical assistance;

- family planning programs show leadership.

Family planning managers have already demonstrated their willingness to take on one highly controversial issue, namely, family planning in Africa. With financial and technical assistance, the same people can apply their experience to AIDS prevention, an even more controversial area, while ensuring that family planning programs fulfill their important mission of delivering family planning services, a need which will go on despite the AIDS epidemic.

FIGURE 11-2
EXAMPLE OF A RISK ASSESSMENT CHECKLIST
 (to be adapted locally)

A. YOUR BEHAVIOR	YES	NO	DON'T KNOW
Have you had a blood transfusion between 1978 and 1986? *			
Have you had a sexually transmitted disease?			
Have you shared drug needles or syringes with another person?			
Have you had sex (vaginal, anal, or oral) with a person whom you did not know well?			
Have you exchanged sex for money or drugs?			
Have you had many sexual partners?			
Have you had sex with someone who has AIDS or HIV infection?			

B. YOUR PARTNER'S BEHAVIOR

Have you had sex (vaginal, anal, or oral) with someone who:	YES	NO	DON'T KNOW
Has had a blood transfusion before blood was routinely screened for HIV?			
Has a sexually transmitted disease?			
Shares drug needles or syringes?			
Has had sex with a prostitute?			
Has had anal sex with you or someone else?			
Has AIDS or HIV infection?			
Has had sex with someone who has AIDS or HIV infection?			

Source: Adapted from Family Planning and AIDS Prevention: Technical and Managerial Guidelines, WHO, 1990.

*The first date implies that the blood supply was believed to be HIV-free before that date. The second date is when screening of the blood supply was fully implemented. Some countries may not have implemented such screening.

RESOURCES

The World Health Organization has prepared a document, *Family Planning and AIDS Prevention: Technical and Managerial Guidelines*, which can be adapted locally to train family planning workers.

A second manual deals with maternal and child health and AIDS. Both are available through the Family Health Division, World Health Organization, 1211 Geneva 27, Switzerland.

The International Planned Parenthood Federation (London) has published a useful volume, *Preventing a Crisis: AIDS and Family Planning Work*, which gives much practical information on how family planning programs can be involved in AIDS prevention. Available from IPPF, P. O. Box 759, Inner Circle, Regent's Park, London NW1 4LQ, England. A shorter version (*Talking AIDS: a Guide for Community Workers*) is also available.

Planned Parenthood of Metropolitan Washington, DC, has prepared a self-instructional manual, *AIDS HIV: Information and Counseling in Family Planning Practice*, which gives ideas on how family planning practitioners can inform clients about AIDS-HIV. Available from Planned Parenthood of Metropolitan Washington, 1701 Q Street N.W., Washington, DC 20009, USA.

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PRIMARY HEALTH CARE AND AIDS CONTROL PROGRAMS

12

Jack Martin

INTRODUCTION

The AIDS epidemic has struck Africa at a time when the health services of many countries are suffering their worst-ever crisis. The combined effects of severe, prolonged economic recession and continuing high birth rates have resulted in declining per capita expenditures for health in real terms. At the same time, serious health problems continue to exist as exemplified by persisting high mortality rates for infants, young children and mothers. While diseases such as diarrhea and acute respiratory infections continue to be common factors in causes of death, other diseases such as malaria and yellow fever have made a dramatic reappearance as causes of mortality and serious morbidity in many countries. Some might pose the question, so what has all this to do with AIDS? The short answer is, a lot!

The simple fact is that countries have no option other than to try to cope with a wide variety of health needs with tragically few resources. The challenge is – how to do more with less?

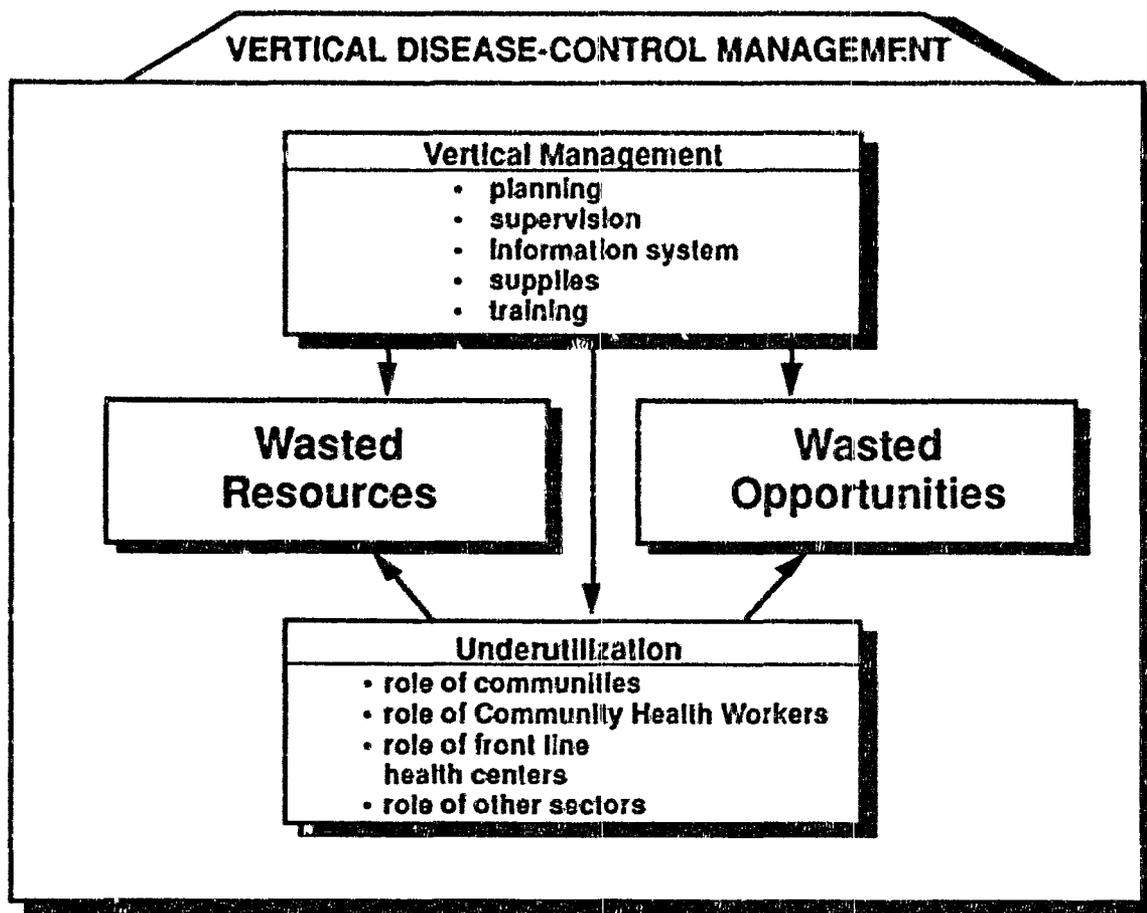
As far as AIDS is concerned countries are now moving from the initial reactive/emergency phase of coping with HIV infection and its consequences to a phase when it is imperative to anticipate and plan better for future needs. Health needs must be met in cost-effective ways, through better organization and use of existing resources – not just money but also the personnel who staff the health posts, clinics, and hospitals. This is the only way to ensure that prevention and control of HIV infection can be sustained effectively.

Like most countries of the world, the countries of Africa have adopted Primary Health Care (PHC) as the basis for health development. PHC is seen as the only means to achieve better health for entire populations through its emphasis on:

- identifying and addressing the needs of the most vulnerable population groups;
- promoting health and preventing disease rather than only treating sickness;
- mobilizing all possible resources for health, particularly people themselves, rather than relying entirely on conventional basic health services.

It is clear that control and prevention of HIV infection also depends to a great extent on these PHC approaches. In other words, PHC and AIDS control programs are natural allies. It makes sense, therefore, that prevention and control of HIV infection should be undertaken as an integral part of each country's health system. That is not as simple and straightforward as it may sound. For one thing, given Africa's economic catastrophe of the past decade, implementation of PHC has been patchy and often poor. Indeed, entire health services are in a state of crisis, particularly at the periphery. In such circumstances there may be those who would argue for AIDS programs to remain separate. Past disease-control programs, such as those for malaria, used separate (vertical) management. Figure 12-1 below shows why this approach is a big mistake:

FIGURE 12-1



In most countries the integration of AIDS programs will certainly not be a matter of AIDS program managers handing over responsibility to their colleagues in the health system and expecting them to "get on with the job." Rather AIDS programs should strengthen what already exists. In view of the expertise which programs have accumulated in areas such as communication with the public and health promotion it is obvious that there is much to contribute.

BUT WHAT IS PHC?

Some eleven years after most countries of the world accepted PHC as a way to try to improve the health of all their citizens, it may seem superfluous to ask this question. Unfortunately, there is still considerable misunderstanding about what PHC really is. The remainder of this section summarizes some of the most common misunderstandings about PHC and presents the key principles which need to be adopted in order to make PHC operational.

Misunderstandings

There are two common misconceptions about PHC:

1. PHC is only what happens in communities – it is what community health workers and traditional midwives do. This misconception has been compounded by another which defines PHC as “health care on the cheap.”

2. PHC is merely some combination of a set of basic ingredients. This misunderstanding grew out of PHC’s close association with “the eight essential elements”:

health education,

nutrition,

safe drinking water and basic sanitation,

maternal and child health including family planning,

immunization,

prevention and control of locally endemic diseases,

appropriate treatment of common diseases and injuries, and

provision of essential drugs.

Adherence to these elements has often given rise to remarks such as “So what’s new? We’ve been doing this for years.”

Misunderstandings about PHC reflect the fact that many people think of health as an absence of disease and regard action for health only in terms of medical care provided by health professionals. Thus there is frequently a considerable gap between people’s understanding of their health needs and the realization that they, themselves, have a big role to play in achieving better health. Bridging this gap is one of the prime objectives of PHC.

Key Principles

Obviously the way in which countries set about implementing PHC will depend on their local circumstances including the prevalent diseases, the availability of resources, political commitment and so on. Nevertheless, certain “operational principles” are available to guide countries in orienting their health systems to the PHC approach:

identification and reduction of inequities in health status and access to health care;

increased emphasis on health promotion and prevention of disease;

involvement of people in planning and implementing health activities;

involvement of other sectors in both improving health and eliminating important health risks;

decentralization of responsibility for management of health activities, including the development of management skills among health personnel in districts;

integration of separate health programs in districts.

The application of the above principles determines whether or not PHC actually operates. Without application, there is just talk and little meaningful action. Too many countries have given too little attention to putting PHC principles into action.

Effective and sustained prevention and control of HIV infection require close attention to the PHC principles and their application, particularly at a local level, and in districts. Experience in a number of countries shows that AIDS programs have the potential to make major contributions to implementing PHC by helping to find ways to put some of these principles into practice. On the other hand, if PHC is not properly taken into consideration, AIDS programs can interfere with PHC implementation. How to maximize the contribution and eliminate the obstacles—that is the challenge!

Reduction of Inequities

The key principle underlying the concept of PHC is equity. However, despite widespread acceptance in principle, it is difficult to find examples of health programs that focus on identifying and eliminating inequities by asking:

Who are the people most in need? Why are they in need?

What is the nature of their need?

What action is required to address their needs?

These questions are basic to the practice of the fundamental public health science of epidemiology. It is remarkable that these basic questions are so seldom asked, in a systematic way, as a means of identifying what action is to be taken at a local level. Instead there is a common tendency to identify needs and priorities on a national or even international basis and then to prescribe the responsibilities of local level health services in tackling them. This practice may be going on in the same country but with respect to a number of diseases, each with its own interest groups. The problem may escape attention except by the unfortunate staff at the local level who are confronted with conflicting demands. Implementing these demands may be so time-consuming that critically important local priorities are neglected.

There is an important lesson here for AIDS control: accommodation must be made for other important health problems, and for the responsibilities of health personnel in coping with them. This accommodation will imply acceptance of variations in emphasis on AIDS control between districts.

Emphasis on Promotion of Health and Prevention of Disease

There is widespread recognition of the importance of shifting the balance of health care activities from preoccupation with treatment of the sick toward averting sickness in the first place. However, health promotion and prevention are not taken seriously enough in many developing countries.

Prevention-oriented intervention is an area in which AIDS control programs can make a major contribution to PHC implementation.

AIDS control programs have a natural focus on:

- promoting changes in human behavior;**
- adopting preventive technologies such as the use of condoms.**

AIDS programs can perform the complementary roles of:

- sensitizing the public to think and react to information about health;**
- persuading health personnel to take promotion and prevention seriously;**
- helping the public to learn and practice the necessary skills.**

Community Involvement

Doctors often talk of “lack of patient compliance” when a person fails to take medication as directed. A similar complaint permeates the relationship between health personnel and communities planning and implementing PHC:

Health care providers assume that their role is to diagnose the nature of health problems and prescribe the appropriate interventions.

Health care consumers assume their role is to carry out the limited activities prescribed for them, such as making bricks for a clinic, digging a trench for a water pipe, lining up for injections, and so on.

These assumptions lead to an approach which inhibits the mobilization of both the technical and social forces. Such forces are essential for undertaking many key promotive, preventive, first aid and rehabilitative actions.

The experience gained working with communities in which people understand the overall importance of their clearly defined roles can offer valuable lessons about effective processes. This can lead to a lasting, productive interaction between health personnel and the general public. This experience needs to be made available for the benefit of PHC as a whole.

Intersectoral Collaboration

Health development is inextricably intertwined with socioeconomic development as a whole. Sectors such as education, water, and housing have demonstrated their positive contributions to better health. Sectors such as agriculture and industry have a more ambivalent position in that they can have both positive and negative impacts. It is clear that health care systems would improve if key health workers (particularly doctors) were able to undertake greater leadership on behalf of health development.

The leaders of health workers need:

- much greater skill and ability to communicate about health with colleagues from other sectors, including non-governmental agencies;**
- much greater awareness about PHC and what other sectors can contribute;**
- much greater knowledge of how to make better use of the mechanisms for intersectoral collaboration which already exist in their own countries.**

Village, district and provincial councils (with urban equivalents) are established in most if not all countries. It remains for the health sector to:

- make use of councils as a means of providing information about the local health situation;
- help identify specific contributions which other sectors can make to better health;

“Making use” does not mean asking for help in carrying out the health sector’s responsibilities. It does mean identifying what each sector can do within its own range of responsibilities. Where AIDS is widely perceived to be an important problem it will rarely be difficult to obtain collaboration in carrying out measures such as health education in schools and factories, informing the public about prevention, and so on. Although useful, this type of support is essentially short term.

Long-term interest and support will require making health a local and national development priority. That is easier said than done, particularly in the critical economic climate in most countries. Nevertheless, in their own long-term interest, AIDS programs need to play a role in the process of establishing health priorities. Their capacity for health promotion is an obvious asset in this regard.

DECENTRALIZING THE FIGHT AGAINST AIDS

Increasingly, policy-makers are realizing the vital importance of putting more responsibility in the hands of people at local levels as a means of making PHC work better. In this respect the district has been identified as the most appropriate unit for organizing and supporting PHC. This is not a new idea but it does seem to be remarkably appropriate to the situations in which many countries find themselves today.

The district provides the best opportunity to:

- identify those who are underserved and in greatest need;
- integrate all health interventions required to improve the health of the entire population.

The district is close enough to communities for problems and needs to be understood for several reasons:

Many key development sectors, including non-governmental agencies, are represented at this level, facilitating intersectoral collaboration and the management of services across a broad front.

Local health workers (who are the keys to effective PHC) cannot function well without strong and sustained support.

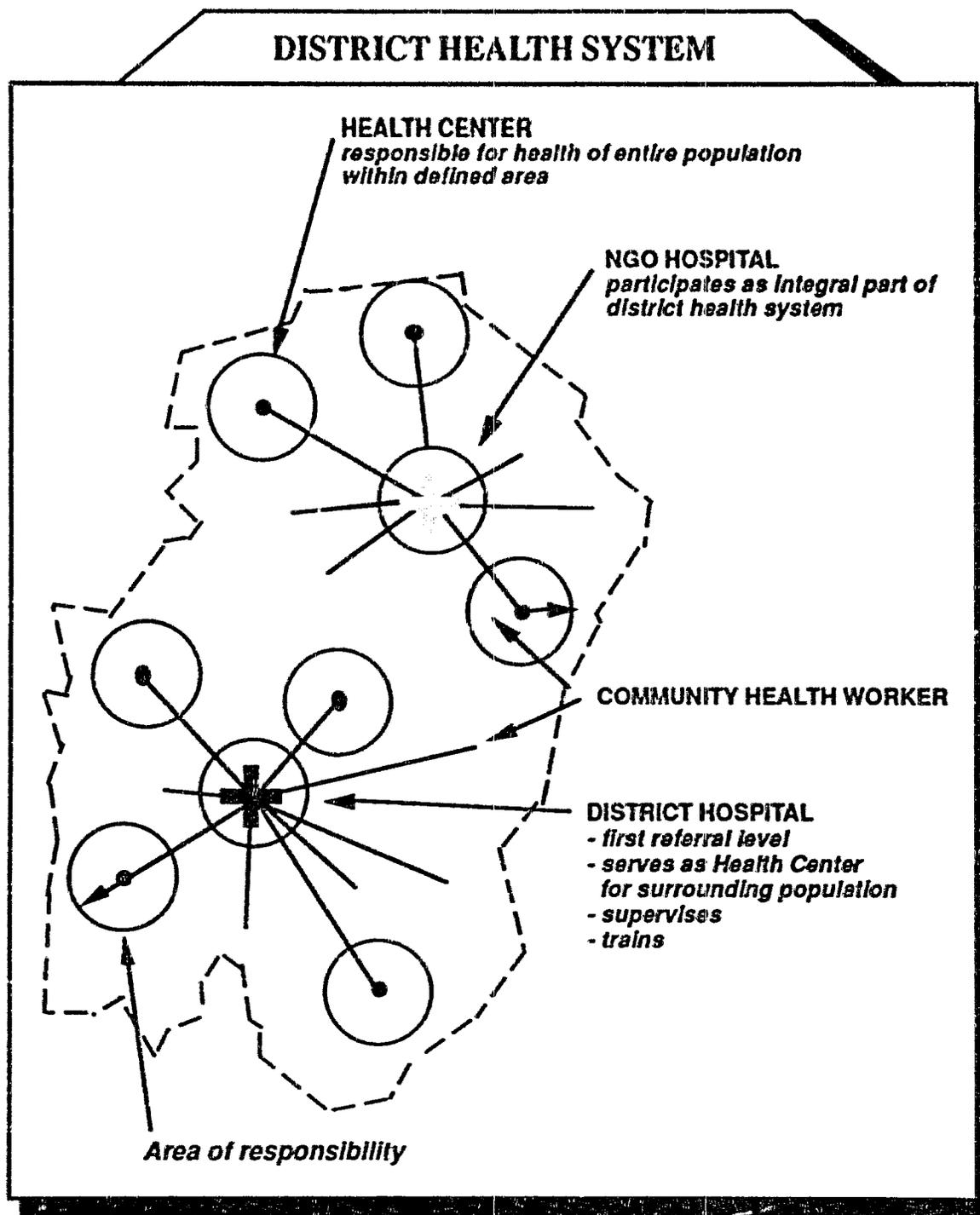
The district is the most appropriate level from which to organize and provide local health-worker support.

The World Health Organization has introduced the concept of "district health system" to promote increased emphasis on the district as the key unit for health development. According to WHO, a district health system is:

- a self-contained segment of the national health system;
- composed of a well-defined population living within a clearly defined administrative and geographic area, either rural or urban;
- an area in which all institutions and sectors contribute to improved health.

Figure 12-2 portrays a district health system:

FIGURE 12-2



Many countries in Africa attach considerable importance to this concept as a means of "getting the most" out of their limited resources. A key principle in maximizing effectiveness is the integration of separate programs (see above). This has great relevance for AIDS control. Simply stated,

As long as AIDS programs are prepared to operate as an integral part of PHC in districts, mutual benefit will accrue to overall health development and to the very specific objectives of AIDS control.

Where AIDS programs operate in a separate, poorly coordinated fashion one can expect confusion and lack of impact – certainly on a long-term basis.

This does not mean that the provincial and national levels no longer have any useful role to play. On the contrary, district health systems will always be dependent on support from those levels. However, as a result of decentralization there must be a change in roles and responsibilities of the overall health system. This change could be summarized as:

a major shift *toward* providing technical guidance to district managers;
a major shift *away* from exercising control as line managers of individual health programs.

This change does not do away with the need for specialization at these levels but it does require a completely different approach to district managers and an acceptance of the fact that there will be variations between districts as to their needs and priorities.

Principal Functions of the District Health System

Managers and personnel responsible for specific programs such as AIDS control are often unaware of functions and responsibilities of districts. If integration is to be truly effective then AIDS personnel must know what they are "integrating into." This is also an important requirement for staff of foreign-assistance agencies, which may have considerable influence with ministries of health of recipient countries.

As management functions are decentralized, districts are commonly given the following responsibilities:

management of all government health facilities including the district hospital;
implementation of all community-based health programs;
management and control of local health budgets;
coordination and supervision of all government, non-government, and private health services;
promotion of intersectoral collaboration;
promotion of community involvement in health activities;
preparation of an annual health plan;
raising additional local funds;
in-service training of health personnel;
training, supervision, and control of community health workers;
collection, collation, and transmission of routine health information.

These are difficult assignments. Administrative responsibilities for carrying them out usually rest with the district council of elected and/or appointed political representatives. Technical responsibility rests with the district health management team, usually headed by a district medical officer. In addition, this team is responsible to the Ministry of Health for proper execution of technical duties. District health systems cannot be effective without adequate preparation and strong support, both administrative and technical. If provision is made for these through strong national policy and commitment, then PHC implementation can be effective and sustained. AIDS program managers must ensure that the national PHC policy deals with AIDS control and they must also participate in bodies such as national PHC coordinating committees which are responsible for daily coordination of the technical inputs of all health programs.

Nevertheless, countries face a tremendous challenge in making PHC work better amidst continuing economic gloom. There is no single recipe for success. Each country has a number of unique characteristics for which the organizational principles of PHC must be adapted. This fact of life underscores the great importance of systematic learning from experience which should form part of the formal responsibilities of district health management teams and their counterparts at higher levels. Observation, analysis, and simple experimentation—or “action research”—are the hallmarks of many of the most successful PHC initiatives around the world. They need to be applied to the task of AIDS control through PHC.

SUGGESTED READING

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EVALUATION OF AIDS PROGRAMS

David L. Heymann
Richard B. Biritwum
W. John Paget

INTRODUCTION

Evaluation is a systematic process of collecting information, which can be used to:

- improve health policy and interventions;
- implement health policy;
- guide the allocation of program resources.

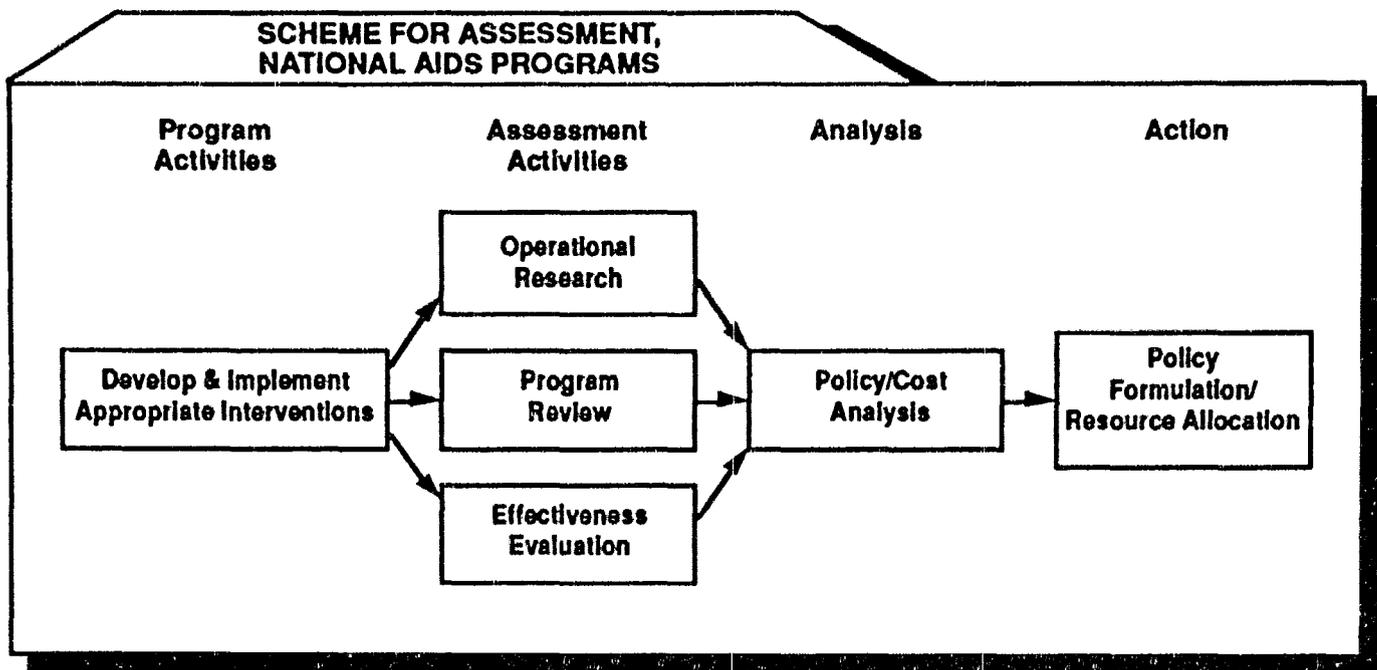
Specifically, evaluation provides the information necessary to determine whether a program's interventions are achieving their goals and objectives.

Effectiveness evaluation is one of three assessment activities useful for national AIDS programs which are shown in the second column of Figure 13-1. The other two assessment activities are:

- operational (intervention-linked) research, which provides the information necessary to develop effective program interventions; and
- program review, which helps determine if the process and activities necessary for implementing program interventions are occurring on schedule.

As shown in the last two columns of Figure 13-1 on the following page, these three assessment activities provide the information necessary for policy and cost analysis, which in turn permits formulation or reformulation of sound health policy. This process then leads to rational decisions for sustainable resource allocation.

FIGURE 13-1



The issues surrounding AIDS create special conditions, including:

- the many physical manifestations of immunosuppression;
- the lack of a vaccine or curative agent;
- the stigma which may accompany infection;
- the chronicity of HIV infection and AIDS which may cause prolonged medical, social, and psychological needs.

In response to these conditions AIDS programs must provide two streams of intervention:

- prevention activities to interrupt HIV transmission;
- control activities to minimize the impact of HIV infection on those already infected and their families.

Effectiveness evaluation of these two streams of activities requires consideration of the uniqueness of AIDS. Unlike evaluation of the effectiveness of preventive activities of many other infectious disease control programs, surveillance cannot be relied upon as a major indicator of success or failure of AIDS programs:

Reporting of AIDS and/or AIDS-related diseases may be hindered by the lack of a reliable case definition, especially in the case of pediatric AIDS.

The official reporting system for AIDS may not be well developed.

Even if the difficulties associated with case reporting can be overcome, the role of reported AIDS in evaluation is restricted because of the long incubation period, which makes reported AIDS a much better reflection of events that occurred at some time in the past rather than activities in the present.

Surveillance of HIV infection (HIV serosurveillance) overcomes some of the latency problems which limit the usefulness of AIDS case reporting. HIV serosurveillance, however, requires well-controlled serologic testing of blood, the reliability of which depends on the quality control of the laboratory. Reliability may also be influenced by an inability to adequately identify and sample persons at risk. This phenomenon is called selection bias, and it may occur in surveillance of such population groups as prostitutes and their clients or self-injecting drug users. Assuring the representativeness of HIV serosurveillance results may also be influenced by participation bias, or refusal of HIV testing by persons at risk of infection. Testing refusal may occur among such groups as attendees at STD or antenatal clinics.

Evaluation of other outcomes of prevention activities can help to overcome some of the problems associated with AIDS reporting and HIV serosurveillance. Certain outcomes occur early in AIDS prevention programs and can serve as proxy, or surrogate, indicators of HIV/AIDS by determining whether effective interventions are in place so that changes in HIV transmission occur. Examples include changes in:

- sexual behavior;**
- incidence of other diseases such as STDs which reflect behavior;**
- blood transfusion practices;**
- handling of skin-piercing instruments.**

Measurement of these outcomes, however, may be flawed by problems in interpretation and measurement of knowledge, attitudes, behavior, and practices.

Effectiveness evaluation of the second stream of AIDS activities (control of the impact of HIV infection) must focus on the outcomes of activities designed to meet the physical and social integration needs of HIV-infected persons and persons with AIDS. These outcomes include evaluation of:

- the effectiveness of medical, social, and psychological support practices available to those who are infected and sick;**
- community support mechanisms and attitudes toward HIV-infected persons and their families.**

Measurement of these outcomes also requires measurement of knowledge, attitudes, behavior, and practices, as well as measurement of perception of the quality of care and life by those who are HIV-infected.

Effectiveness evaluation of AIDS prevention and control programs requires measuring a combination of:

- outcomes of prevention;**
- control interventions.**

Problems associated with AIDS case reporting can be overcome by:

strengthening surveillance systems;

considering the length of the incubation period when interpreting results.

Problems of HIV serosurveillance can be overcome by:

unlinked anonymous testing (see Chapter 3 on surveillance);

adequate pretest counseling.

A framework for quantitative evaluation of the effectiveness of national AIDS programs is presented in the following pages. Information covers AIDS reporting and HIV serosurveillance as well as rapid, low-cost, and reliable methods of measuring knowledge, attitudes, perception, behavior, and practices.

EFFECTIVENESS EVALUATION IN THE CONTEXT OF NATIONAL PROGRAMS

Effectiveness evaluation as described in this chapter is based on variables (or indicators) which provide a quantitative value (or number-based value) by which the outcome of interventions and programs can be measured. The quantitative indicators discussed in this chapter may be percentages, proportions, rates, or ratios.

The specific goals or objectives of a national program suggest that quantitative indicators be used. For example, if one of the specific objectives of a national AIDS program is to:

increase the use of condoms,

a quantitative indicator of effectiveness would be:

the proportion of sexually active persons who use condoms.

If, on the other hand, one of the the specific objectives is to:

assure that there is not discrimination against HIV-infected persons,

a quantitative indicator of effectiveness would be:

the proportion of HIV-infected persons who had not perceived discrimination at work or in the community.

Indicators can be selected for evaluating the process of:

setting up interventions within a program (process indicators);

evaluating changes in knowledge, attitudes, perceptions, behavior, and practices (indicators of intervention effectiveness);

evaluating changes in prevalence of AIDS, AIDS-related diseases, HIV seroprevalance, and the quality of life of those who are HIV infected (program indicators).

These stages of evaluation are shown in Figure 13-2. In this figure:

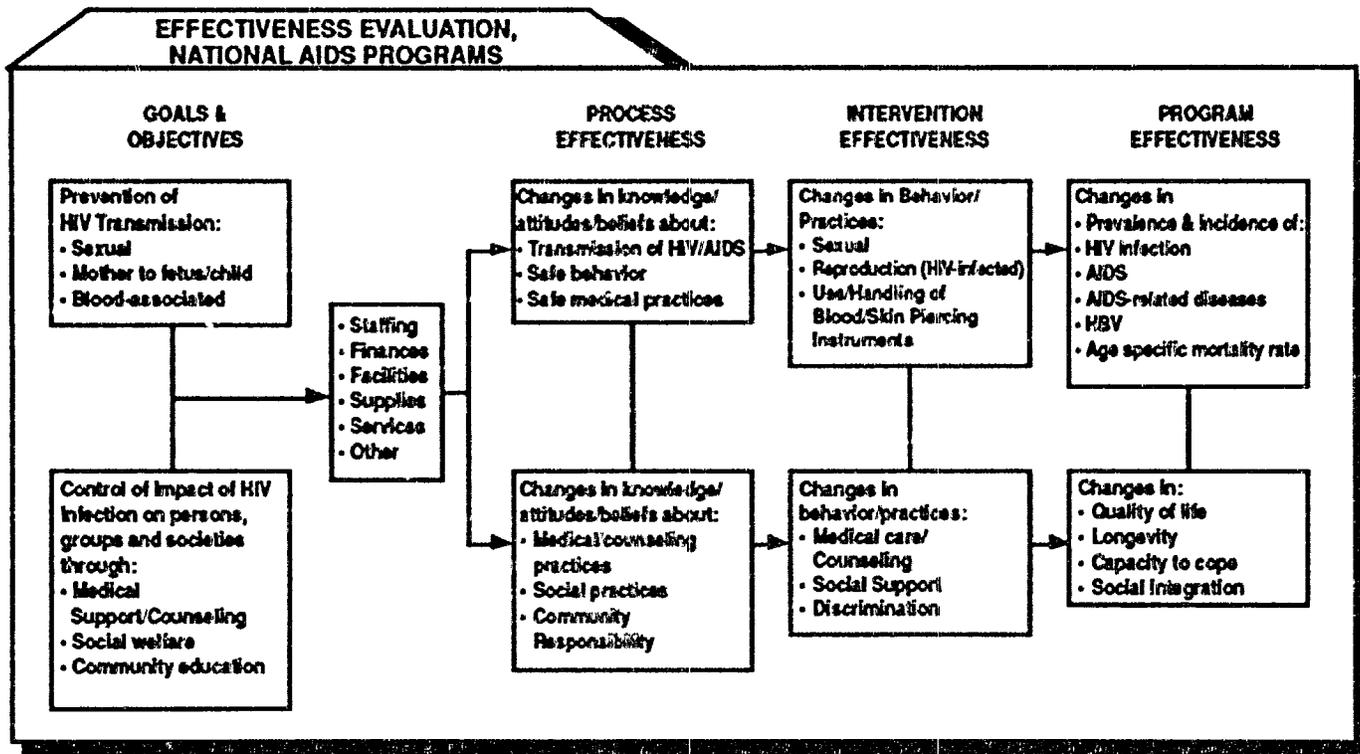
goals and objectives of AIDS programs are represented in the first column;

categories for process effectiveness evaluation are represented in the second column;

categories for intervention effectiveness evaluation are represented in the third and fourth columns;

categories for program effectiveness are represented in the last column.

FIGURE 13-2



The above framework is described in greater detail later in the chapter.

A characteristic of certain indicators is their attributability, or the ability to attribute or associate the outcome which they measure to a single intervention. For example:

An indicator for change in sexual behavior (such as the proportion of sexually active persons who use condoms) could change because of an intensive health promotion/education campaign providing information about safe sexual behavior.

It could also change as a result of person-to-person communication or peer pressure within the same population independent of the intensive campaign.

Likewise, an indicator, such as the prevalence of STDs among youth, could change as a result of change in sexual behavior after a health promotion campaign; but it could also change as a result of improved diagnostic and treatment practices for STDs.

Finally, the proportion of HIV-infected persons who had perceived discrimination might change as a result of:

- an intensive public education campaign;
- a change in legislation, or both.

The attributability of indicators is a characteristic which must be kept in mind at all times during evaluation, so that assumptions made about effectiveness are accurately interpreted and attributed. Other characteristics of indicators are:

- their validity, or the accuracy with which they represent the variable they measure;
- their reliability, or the faithfulness with which they measure when measurement is repeated over time.

Validity is inherent in the indicator, and depends on the potential for being measured; reliability is inherent in the methodology used to measure the indicator, and in the person using this methodology.

For example, the validity and reliability of an indicator, such as the proportion of youth who report having more than one sexual partner, depend on many factors:

- the willingness of the interviewee to respond truthfully (validity);
- the skill of the interviewer and the manner in which the interview is conducted (reliability).

Such an indicator might be less valid and reliable than another indicator of behavior, such as a change in the prevalence of STDs among youth based on a standardized clinical case definition. Quantitative indicators as defined in this chapter can be used in effectiveness evaluation to indicate a problem in the implementation of interventions or programs. Once a problem has been indicated, operational research (the third assessment tool described in Figure 13-1) can be used to understand the reasons for the problem, and to suggest possible solutions. Indicators, used to signal problems in implementation of interventions and programs, are useful provided they are:

- attributable to the intervention or program being evaluated;
- valid and truly representative;
- reliable upon repeated measurement over time.

THE EVALUATION PROCESS

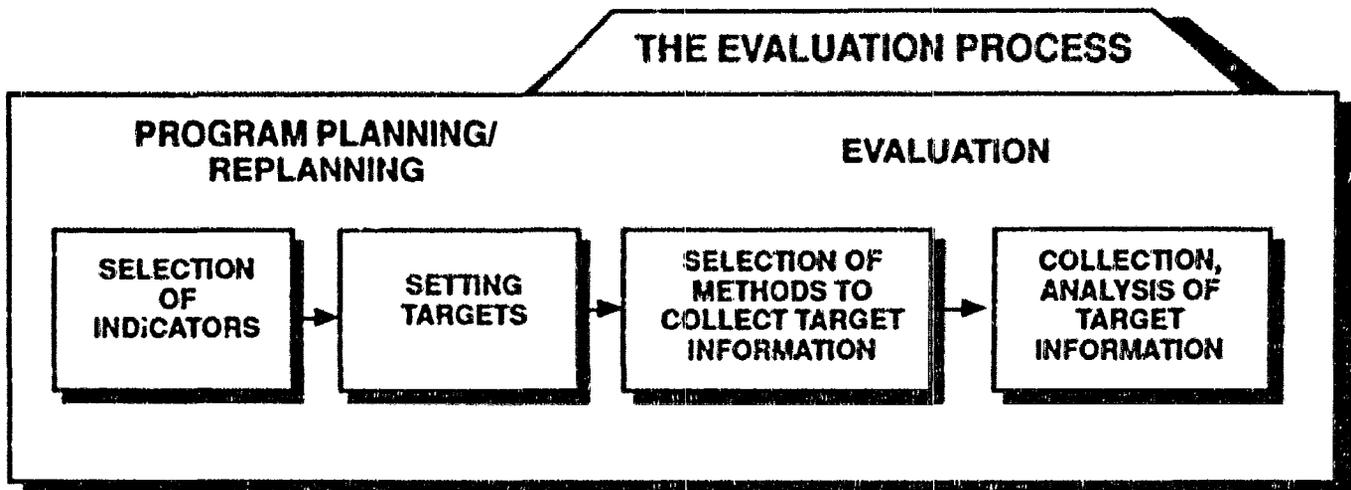
The process of effectiveness evaluation begins at the time of national planning/replanning for AIDS prevention and control:

- The first activity in this process is the selection of appropriate indicators which correspond to program goals and objectives.
- The second activity is the setting of targets for changes in the indicators that are expected as a result of an intervention or program.

The evaluation process then concludes with the selection of methods to collect the indicator information and the actual collection, analysis, and use of this information.

This process is illustrated in Figure 13-3:

FIGURE 13-3



If the analysis suggests that program goals and objectives are being met, the program is assumed to be on target and is called effective.

If analysis suggests the goals and objectives are not being met, it may suggest that:

- there is a problem in the implementation of the program;
- activities which are being correctly implemented are ineffective because of inappropriate design;
- the indicators selected are not appropriate.

Planning for Evaluation: Selection of Indicators

During the process of planning/replanning for AIDS prevention and control it is necessary to:

- identify all interventions required for successful prevention and control;
- identify the desired outcomes (goals and objectives);
- select appropriate quantitative indicators which correspond to these outcomes.

In selecting indicators to evaluate interventions it must be assured that they are attributable, valid, and reliable. For example, consider which indicators could be used to measure the outcome of a health promotion/education campaign designed to change unsafe behavior, or of an education campaign to decrease discrimination:

Attribution of the indicator selected could be improved if the source of information which caused the change could be ascertained.

Using a combination of indicators could also improve attributability. If reported behavior changed after a health promotion campaign, and a simultaneous change occurred in the prevalence of STD, this change would reinforce the likelihood that the behavior change occurred as a result of the campaign.

The expected outcome of all interventions which make up a national AIDS prevention and control program is a reduction in HIV transmission and AIDS and improved quality of life of HIV-infected persons and their families (Figure 13-2). Indicators to measure such broad program outcomes are more general than those used to evaluate interventions; examples of program indicators include HIV seroprevalence, or the proportion of HIV-infected persons who continue to work and provide for themselves and/or their families.

Program indicators often cannot be attributed to any one intervention, but represent the composite of all interventions which make up the program. Like intervention indicators, program indicators may vary in attributability, validity, and reliability. For example,

HIV seroprevalence might not be valid and reliable if laboratory quality control were poor;

changes in HIV seroprevalence might be incorrectly attributed to a program because of participation or selection bias (as discussed in Chapter 2 on HIV testing).

Selecting appropriate indicators to evaluate interventions and programs requires:

identification of all prevention and control interventions within and outside of the program;

description of desired outcomes (objectives and goals) of these interventions or of the program;

careful consideration of attributability, validity, and reliability of the indicators selected to measure outcomes.

Planning for Evaluation: Setting Targets

Once indicators have been selected they can be used to set targets. A target describes an expected outcome during or after a specified time period. Targets are often quantitative and require an estimate of what outcome can be expected during or after the implementation of an intervention. Setting of targets is done at the time of program planning/replanning. Examples of prevention targets for a health promotion campaign might include:

a 40% increase in reported condom use with the most recent sexual partner after one year of health education activities;

a 20% decrease in the annual reported incidence of a specified STD during the same time period;

a 20% decrease in the prevalence of HIV infection.

Examples of control targets might be:

- a 20% increase in treatment facilities with drugs appropriate for treatment of HIV-infected persons;**
- a 20% decrease in the proportion of children in orphanages who are HIV seropositive.**

Two general types of targets are useful for evaluating AIDS interventions and programs:

- a comparative target, which anticipates a change in the outcome as compared to a precise baseline, or previous level of outcome;**
- an attainment target, which anticipates a certain level of outcome without comparison to a precise baseline.**

Although attainment targets do not require comparison to a precise baseline at the time of evaluation, they do require a crude estimate of the baseline at the time they are established. Measures of attainment targets may become baselines for future comparative targets.

The examples of targets provided in the first paragraph of this section are comparative targets: they anticipate a quantitative change in outcome during a specified time period as compared to a precise baseline.

Attainment targets using these examples would be:

- 20% of persons reporting condom use with the most recent sexual partner after one year of health education activities;**
- a 5% incidence of a specific STD after the same time period;**
- an HIV seroprevalence of 2%;**
- less than 10% of children in orphanages who are HIV seropositive;**
- 80% of treatment facilities supplied with drugs appropriate for use in HIV-infected persons.**

Comparative targets require precise statistical methods of data collection, either continuously or at two specified time periods: one at the beginning of the time period for which an evaluation is being conducted, and one at the end. Precision is required so that the information can be compared over time; therefore, comparative targets often require study of large representative populations, sometimes by survey methods which may be costly in terms of personnel and logistic support.

Attainment targets provide a rapid, cross-sectional picture of outcomes at a specified time. Although sometimes less precise, measurement of attainment targets usually requires less costly and time-consuming survey methods, smaller sample sizes, fewer personnel, and less extensive logistic support. Attainment targets may have greater application:

- early in a program, when evaluation systems are not yet established;**

late in a program, when activities are more mature and assurance is required that the program remain on target;

in situations in which more expensive methodologies of information collection are not feasible.

Setting targets for interventions or programs requires:

an attributable, valid, and reliable indicator;

an estimate of a baseline level of outcome (with varying precision) which can be measured by the indicator;

an estimate of change in outcome expected as a result of the intervention;

selection of either a comparative or an attainment target, based on an assessment of national capacity to collect the target information, and on program maturity.

Evaluation: Selecting Methods to Collect Target Information

In order to measure target indicators, information must be provided for a numerator and a denominator for calculating rates, ratios, proportions, or percentages.

An example of numerator information for a target of change in reported sexual behavior would be:

the number of persons who reported changed behavior.

An example of denominator information for this same rate would be:

the number of persons who had access to an intervention for behavior change.

Likewise, numerator information for calculating the percentage of treatment facilities with appropriate counseling would be:

the number of health facilities with appropriate counseling available.

The denominator would be:

all treatment facilities in the same area.

Health information systems in most countries provide numerator and denominator information about disease incidence and prevalence, although this information is often incomplete. For example, certain systems may provide health facility reports of the number of persons with AIDS, AIDS-associated infections (such as tuberculosis), or STDs. Existing health information systems might need to be modified or strengthened to improve the quality and regularity of reporting; however, they should not be ignored when selecting methods to collect target information. (See Chapter 2 on HIV Testing.)

Certain numerator and denominator information will not be available through the existing health information system, especially information on knowledge, attitudes, perception, behavior, and practices. For these, supplemental methods must be selected. Supplemental methods include:

well-understood and tested quantitative methods such as record review and sentinel reporting;

newer quantitative methodologies (some still experimental) such as rapid assessment for the prevalence of STD or focused population group surveys.

These methods are described in detail in the WHO Guidelines for Evaluation of the Effectiveness of National AIDS Programmes which were, at the time this Handbook was written, available in draft form from the WHO Global Programme on AIDS.

Selecting methods to collect indicator information requires:

knowledge of the precise targets to be used to evaluate interventions or programs;

identification of the numerator and denominator information required;

knowledge about the methods which can be used to collect numerator and denominator information;

an assessment of the existing health information systems;

an identification of feasible methods to strengthen the existing health information systems;

identification of feasible, supplemental methods required for complete evaluation.

EVALUATION: COLLECTION, ANALYSIS, AND USE OF TARGET INFORMATION

After collection of numerator and denominator information for the targeted indicator, the information should be analyzed by calculating the rates, ratios, proportions, or percentages:

For attainment targets, rates, ratios, proportions, or percentages are the only calculation required.

For comparative targets, rates, ratios, proportions, or percentages must be calculated for two time periods (a baseline value and a repeat value after the defined time period), and then compared to each other statistically.

Changes in the direction of targets suggest effectiveness; no change or changes away from the targets suggest ineffectiveness. Reasons for failure to reach targets should be sought and corrected through operational studies, and goals and objectives modified as necessary. Collection, analysis, and use of indicator information to measure targets requires:

calculation of rates, ratios, percentages, or proportions;

comparison of rates, ratios, percentages, or proportions to intervention and program targets;

adjustment of program/intervention goals and objectives.

APPLICATION OF THE FOUR STAGES OF EVALUATION

The four stages of evaluation (selection of indicators; setting of targets; selection of methods to collect target information; and collection, analysis, and use of target information) provide a process with which to evaluate the effectiveness of national AIDS programs (Figure 13-3).

As described, national AIDS programs usually have two streams of intervention:

prevention of HIV transmission;

control of the impact of HIV infection on persons, groups, and society.

The prevention objective is implemented through a variety of interventions aimed at changing knowledge, attitudes, perceptions, behavior, and practices about sex, reproduction, and use and handling of blood, blood products, and skin-piercing instruments.

The control strategy is implemented through interventions aimed at assuring appropriate medical care, counseling, and social welfare to persons with HIV infection, and appropriate education to community members about HIV infection. These objectives and strategies are shown in the first column of Figure 13-2.

The process or interventions required to implement the strategies is represented in the second column of Figure 13-2. The outcome of the prevention interventions is represented in the top row of the third, fourth, and fifth columns of Figure 13-2, including changes in knowledge, attitudes, perceptions, behavior, practices, and incidence of HIV infection and AIDS.

The outcomes of the control interventions are represented in the bottom row of the third, fourth, and fifth columns of Figure 13-2, including changes in medical/social practices, community attitudes, and quality of life of those with HIV infection.

Quantitative indicators with appropriate standardized, rapid, and low-cost methodologies can be selected for each of these stages in a national AIDS program. Some quantitative indicators which may be useful in measuring the outcomes of interventions and programs are provided in tables at the end of this chapter. They are listed under general headings of prevention and control which correspond to the outcomes listed in Figure 13-2, and can be selected as AIDS programs are assessed, planned, or re-planned.

Collection methods for the indicator information are suggested in the tables adjacent to each indicator listed in Figure 13-5. The references at the end of this chapter and other standard epidemiology texts provide descriptions of these methods. These indicator lists are not comprehensive, but could be used as a basis for evaluating most programs. Other indicators may need to be identified based on specific goals and objectives of programs.

DEVELOPING A NATIONAL PLAN FOR EVALUATION

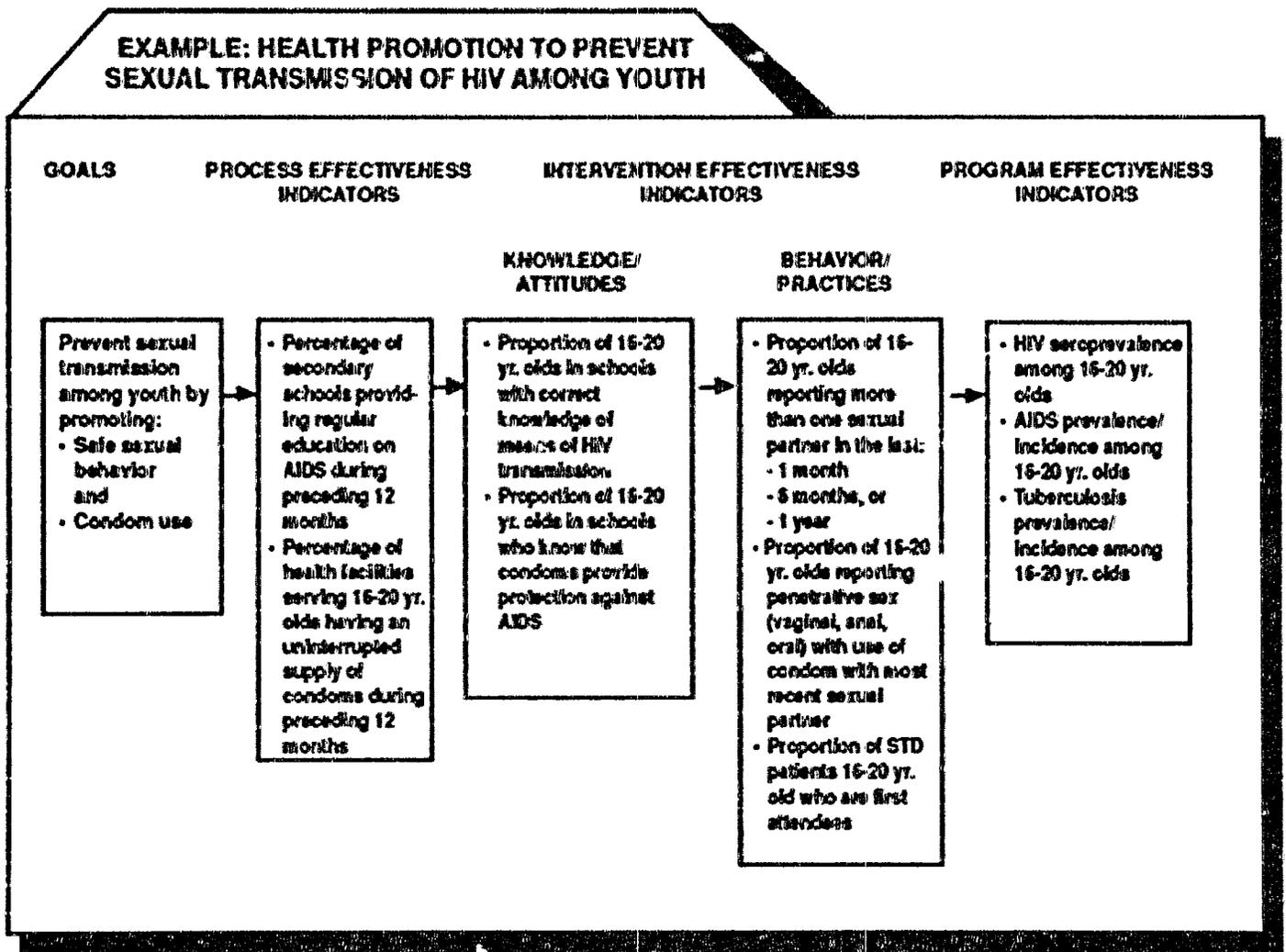
A plan for evaluation for a single intervention or for a national AIDS program can be developed within the framework of Figure 13-2 by following the evaluation process already outlined in this chapter, and consulting the lists of indicators on the pages which follow. A simple example of an evaluation framework for an AIDS prevention intervention is shown in Figure 13-4. This intervention has as its objective to:

prevent sexual transmission among youth by health promotion, including promotion of condom use and safe sexual behavior.

Figure 13-4 illustrates the framework for evaluation of this intervention. The objectives are shown in the box on the left. For these objectives, appropriate process effectiveness indicators have been selected from the indicator lists and are identified in the second box. Intervention effectiveness indicators, also selected from the indicator lists, have been identified in the third and fourth boxes, and program effectiveness indicators identified in the fifth box. Selection of indicators follows the process previously outlined in this chapter.

FIGURE 13-4

FRAMEWORK FOR EVALUATION OF THE EFFECTIVENESS OF AN INTERVENTION



In Figure 13-5 (next page), each indicator in the left column has a numerator and denominator identified and listed in the middle column. Recommended methods of collection of the indicator information from the indicator lists are identified in the last column. More than one method of collection has been listed for some indicators. The selection of the method of collection used would take into account the existing health information systems and the infrastructure available to the evaluating team, as described in this chapter.

FIGURE 13-5

SELECTING COLLECTION METHODOLOGIES FOR THE HEALTH PROMOTION EXAMPLE

EFFECTIVENESS INDICATOR	NUMERATOR/DENOMINATOR	COLLECTION METHODOLOGY
PROCESS		
• % of secondary schools providing regular education on AIDS during preceding 12 months	$\frac{\text{No. of sec. schools prov. education}}{\text{No. of sec. schools surveyed}}$	Survey of schools (Ministry of Education); Record Review
• % of health facilities serving 16-20 yr olds having an uninterrupted supply of condoms	$\frac{\text{No. of health facilities prov. condoms}}{\text{No. of health facilities surveyed}}$	Survey of Health facilities (Ministry of Health); Record Review
INTERVENTION		
• Proportion of 16-20 yr olds in schools with correct knowledge of means of HIV transmission	$\frac{\text{No. of 16-20 yr olds with correct knowledge}}{\text{No. of 16-20 yr olds surveyed}}$	Secondary School/ University Survey
• Proportion of 16-20 yr olds in schools who know that condoms prov. protection against AIDS	$\frac{\text{No. of 16-20 yr olds who know about condoms}}{\text{No. of 16-20 yr olds surveyed}}$	Secondary School/ University Survey
• Proportion of 16-20 yr olds reporting more than one sex partner in the last: 1 month/6 months/or 1 year	$\frac{\text{No. of 16-20 yr olds reporting on sex partner}}{\text{No. of 16-20 yr olds surveyed}}$	Secondary School/ University Survey
• Proportion of 16-20 yr olds reporting penetrative sex (vaginal, anal, oral) with use of condom with most recent sex partner	$\frac{\text{No. of 16-20 yr olds reporting penetrative sex with condom}}{\text{No. of 16-20 yr olds surveyed}}$	Secondary School/ University Survey
• Proportion of STD patients 16-20 yr olds who are first attendees	$\frac{\text{No. of STD patients 16-20 yr old first attending}}{\text{No. of STD patients all ages or 16-20 yr olds}}$	Sentinel reporting by age at clinic visit
PROGRAMME		
• HIV seroprevalence among 16-20 yr olds	$\frac{\text{No. of 16-20 yr olds HIV seropositive}}{\text{No. of 16-20 yr olds surveyed}}$	Sentinel serosurveillance (unlinked)/serosurvey in secondary schools/ universities
• AIDS prevalence/incidence among 16-20 yr olds	$\frac{\text{No. of 16-20 yr olds with AIDS/year}}{\text{No. of 16-20 yr olds in corresponding general population}}$	Review of inpatient records/sentinel reporting by age/routine case reporting by age
• Tuberculosis prevalence/incidence among 16-20 yr olds	$\frac{\text{No. of 16-20 yr olds with tuberculosis/year}}{\text{No. of 16-20 yr olds in corresponding general population}}$	Review of inpatient records/sentinel reporting by age/routine case reporting by age

If the goals of the national intervention had been targeted, analysis of the results would include their comparison to targets; if goals and objectives had not been targeted, targets could be set at the time of program reformulation. Both of these possibilities are described earlier in this chapter. When taken together, the framework and the collection methodology lists constitute an evaluation plan. A plan for an entire national program can be developed by following a similar process for all interventions in the program. Once developed, the plan can be implemented at a pace that suits the country. Some countries may choose to do periodic cross-sectional examinations of the status of their indicators every 6 to 12 months; others may choose to examine indicator status through continuous systems using the same methodologies. No matter which strategy for evaluation is chosen, the framework, evaluation process, and indicator lists provided in this chapter can be used for developing an evaluation plan for single interventions or national programs.

Figure 13-6

INDICATORS FOR PREVENTION INTERVENTIONS AND PROGRAMS

PREVENTION INDICATORS

INDICATOR	COLLECTION METHOD
<u>PREVENTION OF SEXUAL TRANSMISSION</u>	
<u>Process Effectiveness Indicators:</u>	
Percentage of institutions* providing regular education on AIDS during preceding 12 months	Survey Record review
Percentage of appropriate outlets** having an uninterrupted supply of condoms during preceding 12 months	Survey Record review
Percentage of STD or integrated PHC clinics with uninterrupted supply of appropriate antibiotics during preceding 12 months	Survey Record review
<u>Intervention Effectiveness Indicators:</u>	
(Knowledge/Attitudes)	
Proportion of population group members*** with correct knowledge of means of HIV transmission	Focused population group survey
Proportion of population group members who know that condoms provide protection against AIDS	Focused population group survey
(Behavior/Practices)	
Proportion of population group members reporting more than one sexual partner in the last: one month, six months, or one year	Focused population group survey
Proportion of population group members reporting penetrative sex (vaginal, anal, oral) with use of condom with most recent sexual partner	Focused population group survey
Proportion of STD clinic patients who are first attendees by age group	Special recording system Sentinel surveillance
STD incidence/prevalence among population groups	Routine surveillance Record review Sentinel surveillance Rapid assessment of STD
Congenital syphilis incidence	Routine surveillance Sentinel surveillance
<u>PREVENTION OF MOTHER-TO-FETUS/CHILD TRANSMISSION</u>	
<u>Process Effectiveness Indicators:</u>	
Percentage of antenatal or integrated PHC clinics providing AIDS education	Survey Record review
Percentage of antenatal clinics with uninterrupted supply of contraceptive method**** during preceding 12 months	Survey Record review
<u>Intervention Effectiveness Indicators:</u>	
(Knowledge/Attitudes)	
Proportion of pregnant women who know their HIV infection status	Focused population group survey
(Behavior/Practices)	
Proportion of HIV-infected women of childbearing age who use contraceptive method	Focused population group survey
Proportion of pregnancies that occur among HIV-infected women	Unlinked sentinel surveillance
<p>* Institutions are defined as organizations such as schools and workplaces where persons are physically grouped together for defined periods of time.</p> <p>** Appropriate outlets are defined as those sites through which the program desires to provide a service or product.</p> <p>*** Population group is defined as the population to which the program interventions are targeted such as secondary school children, young persons in uniformed services, university students, young persons in certain workplaces, and orphans.</p> <p>**** Contraceptive method is defined as any service or product which is aimed at preventing conception.</p>	

Figure 13-6 (cont'd)

PREVENTION OF BLOOD-ASSOCIATED TRANSMISSION

Process Effectiveness Indicators:

Percentage of blood transfusion facilities with uninterrupted supply of appropriate HIV-screening tests during preceding 12 months	Survey Record review
Percentage of blood transfusions screened	Survey Record review
Percentage of health facilities with appropriate equipment and supplies for sterilization	Survey Record review
Percentage of HIV serology laboratories with uninterrupted quality control during preceding 12 months	Survey Record review

Intervention Effectiveness Indicators:

(Knowledge/Attitudes)

Proportion of health workers who know national criteria for blood transfusion	Focused population group survey
Proportion of health workers who know universal precautions	Focused population group survey

(Behavior/Practices)

Proportion of blood transfusions of appropriately screened blood	Special recording system
Proportion of blood transfusions which are medically justified based on national criteria	Special recording system Record review
Proportion of injections in the health system given with sterile needles, syringes, and procedures	Focused population group survey
Proportion of injections in the traditional health system	Focused population group survey
Proportion of deliveries performed with gloves	Focused population group survey
Proportion of skin-piercing instruments sterilized prior to use	Focused population group survey
Proportion of self-injecting drug users who report using sterile syringes/needles	Special recording system Focused population group survey

PROGRAM EFFECTIVENESS

Process Effectiveness Indicators:

Percentage of sentinel surveillance sites with regular reporting during preceding 12 months	Survey Record review
Percentage of sentinel serosurveillance sites with regular reporting during preceding 12 months	Survey Record review

Program Effectiveness Indicators:

HIV seroprevalence among population groups	Sentinel serosurveillance (unlinked) Focused population group serosurvey
HBV seroprevalence among population (unlinked)	Sentinel serosurveillance groups
AIDS prevalence/incidence among population groups	Focused population group serosurvey Record review Routine surveillance Sentinel surveillance
AIDS-related diseases prevalence/incidence	Record review
Herpes zoster	Routine surveillance
Tuberculosis	Sentinel surveillance
Generalized lymphadenopathy	
Kaposi's sarcoma	
Other	
Infant mortality rates	Focused risk group mortality survey Record review Census Sentinel surveillance
Adult mortality rates	Focused risk group mortality survey
women	Record review
men	Census
Sentinel surveillance	

Figure 13-7

INDICATORS FOR CONTROL INTERVENTIONS AND PROGRAMS

CONTROL INDICATORS

INDICATOR	COLLECTION METHOD
<u>MEDICAL SUPPORT/COUNSELING</u>	
<u>Process Effectiveness Indicators:</u>	
Percentage of treatment facilities with appropriate drugs for HIV/AIDS	Survey Record review
Percentage of treatment facilities with counseling available	Survey Record review
Percentage of hospital beds occupied by persons with HIV/AIDS	Survey Special recording system Record review
Percentage of HIV testing facilities with counseling	Survey Record review
Percentage of health workers trained in care/counseling	Survey Record review
<u>Intervention Effectiveness Indicators:</u>	
Proportion of health workers with correct knowledge of means of transmission of HIV	Focused population group survey
Proportion of health workers who know where to refer HIV/AIDS for counseling	Focused population group survey
Proportion of health workers who know diagnostic criteria for HIV/AIDS	Focused population group survey
Proportion of health workers who know national treatment recommendations for HIV/AIDS	Focused population group survey
(Behavior/Practices)	
Proportion of persons with HIV/AIDS receiving nationally recommended treatment	Focused population group survey
Proportion of persons with HIV/AIDS reporting having had counseling	Focused population group survey
Proportion of persons with HIV/AIDS reporting satisfaction with treatment	Focused population group survey
Proportion of persons with HIV/AIDS reporting satisfaction with counseling	Focused population group survey
<u>SOCIAL WELFARE</u>	
<u>Process Effectiveness Indicators:</u>	
Percentage of communities with social support** available to persons with HIV/AIDS	Survey support
<u>Interventions Effectiveness Indicators:</u>	
(Knowledge/Attitudes)	
Proportion of community workers who know where food/shelter for persons with HIV/AIDS is available	Focused population group survey
(Behavior/Practices)	
Proportion of persons with HIV/AIDS who have food and shelter	Special recording system Focused population group survey

* available to persons with record review HIV/AIDS

**Social support is defined as any group or institution providing food and shelter in cash or kind including, orphanages, hostels, or homes.

Figure 13-7 (cont'd)

INDICATORS FOR CONTROL INTERVENTIONS AND PROGRAMS

CONTROL INDICATORS

INDICATOR	COLLECTION METHOD
<u>COMMUNITY EDUCATION</u>	
<u>Process Effectiveness Indicators:</u>	
Percentage of opportunities* to provide community HIV health education which were used	Survey Record review
<u>Intervention Effectiveness Indicators:</u>	
(Knowledge/Attitudes)	
Proportion of community members with correct knowledge of means of HIV transmission	Focused population group survey
Proportion of communities with special services for persons with HIV/AIDS	Survey Record review
(Behavior/Practices)	
Proportion of schools that admit persons with known HIV/AIDS	Survey Record review
<u>COMMUNITY EDUCATION</u>	
Proportion of workplaces permitting persons with HIV/AIDS to work	Survey Record review
Proportion of workplaces requiring HIV testing prior to employment	Survey Record review
<u>PROGRAM EFFECTIVENESS</u>	
<u>Program Effectiveness Indicators:</u>	
Proportion of persons with AIDS with more than two years' survival after diagnosis	Special recording system Record review
Proportion of children in orphanages who are HIV seropositive	Special recording system Record review
Ratio of persons with HIV/AIDS who worked prior to diagnosis with those who work after diagnosis	Special recording system Focused population group survey
Proportion of persons with HIV/AIDS who report difficulty in coping	Special recording system Focused population group survey
Proportion of HIV/AIDS reporting discriminatory practice at workplace/school/elsewhere	Special recording system Focused population group survey

*Opportunities include any community gathering such as meetings, social gatherings, and religious services

SUGGESTED READING

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