AIDS IN AFRICA

MEETING THE CHALLENGE THROUGH TRAINING, EDUCATION AND PREVENTION

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FOREWORD

AIDS poses a formidable challenge to African policy makers and health professionals. Of the estimated 9 to 11 million cases of HIV infection worldwide, some 7 million are in sub-Saharan Africa. In this largely impoverished region the AIDS pandemic has destabilised already precarious institutions and jeopardised the accomplishment of other pressing health objectives.

To counter the pandemic in a sustainable manner, an alliance is needed among African governments, international donors, health professionals, pharmaceutical companies and non-governmental organisations operating at all levels down to local communities. Such an alliance, involving a partnership between different elements of society, is potentially capable of meeting the AIDS challenge through a range of complementary initiatives in prevention, education, treatment and research.

This monograph is a synthesis of ideas originating from two roundtable discussions among African physicians with expert and first hand knowledge of the present situation in their own countries. Supported by a grant from the Bristol-Myers Squibb Company, these discussions represent an attempt to identify effective interventions which can contribute to the containment and, ultimately, the resolution of the AIDS pandemic in Africa.

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INTRODUCTION

On 15 December 1991 eleven leading African physicians met to address the topic 'AIDS: Meeting the Challenge in Africa through Training, Education and Prevention', at two roundtables in Dakar, Senegal, one francophone and the other anglophone.

The Dakar discussions were convened to achieve several objectives. The first was to develop an understanding of each country's national experience. Participants were asked to produce a background statement of the AIDS situation in their own countries, outlining national programmes and activities. In planning the discussions, it was recognised that the spread of AIDS has reached very different stages in different countries. In Uganda, for example, AIDS is a full-scale pandemic with widespread infection in the population as a whole and almost complete infection of the prostitute population. In Nigeria, by contrast, the epidemic is at a relatively early stage and the scope for preventive measures is that much greater.

Second, the roundtables offered a forum to facilitate an exchange of ideas among African countries. Through this, it was hoped to identify potentially effective interventions that are particularly relevant to Africa and that relief organisations could support. It was felt important to underline how sub-Saharan Africa, despite its heterogeneity, shares common features (Pattern II transmission, rural poverty) which clearly distinguish it from America and Europe in the epidemiology and the economics of AIDS. These differences in turn imply different strategies for prevention and channels for education.

Third, the exchange served as a basis for this monograph in an effort to share information among those concerned about AIDS in Africa.

Most important, the aim of the discussions was to listen to and articulate the unique concerns and constraints faced daily by African health professionals.

Participants were from the following countries: Burkina Faso, Burundi, Cameroon, Congo, Côte d'Ivoire, Ghana, Kenya, Nigeria, Uganda, Zaire and Zimbabwe. Most of these physicians are active members of the National AIDS Programmes or Committees in their countries[1].

Dr Marc Gentilini, Director of Tropical Medicine and Parasitology at Pitié Salpetrière Hospital in Paris moderated the roundtable for French speaking doctors. The other roundtable was co-chaired by Malcolm Potts, Director, Family Health International and George Teeling-Smith, Director, Office of Health Economics, London.

1 Appendix 1 provides a complete list of participants.

SEROPREVALENCE AND NATIONAL AIDS PROGRAMMES; AN OVERVIEW

Because of poor disease notification systems, African data on HIV prevalence and incidence must be treated with caution. Table 1 shows AIDS cases reported to WHO. These figures relate to symptomatic AIDS only, and are in any case gross underestimates for most countries, though they do illustrate the extent of variability in Africa. Countries represented in the Dakar discussions are identified in bold type.

TABLE 1 **Reported AIDS cases in Africa 1990 (or earlier year if 1990 not available)**

Country year of last report	*Annual New Cases Number*	*Annual New Cases Rate per 100,000 population*	*Cumulative Cases Number*
Algeria 1989	32	0.1	45
Angola 1988	—	—	104
Benin	40	0.8	124
Botswana 1989	29	2.3	87
Burkina Faso	**72**	**0.8**	**978**
Burundi	**521**	**9.6**	**3305**
Cameroon	**61**	**0.5**	**429**
Cape Verde	4	1.1	32
C.A.R. 1989	0	0	662
Chad	38	0.7	59
Comoros	1	0.2	2
Congo	**465**	**23.3**	**2405**
Côte d'Ivoire	**3189**	**25.3**	**6836**
Equatorial Guinea 1989	1	0.2	3
Ethiopia	272	0.6	636
Gabon	66	5.6	117
Gambia	45	5.2	123
Ghana	**506**	**3.4**	**1732**
Guinea	79	1.1	161
G. Bissau	34	3.4	157
Kenya 1989	**4825**	**19.2**	**9139**
Lesotho 1989	6	0.3	11
Liberia	3	0.1	5
Madagascar 1989	2	0	2
Malawi 1989	3124	37.1	7160
Mali	104	1.1	338
Mauritania	5	0.2	16
Mauritius	1	0.1	5
Mozambique	98	0.6	209
Namibia	122	6.5	311
Niger	69	1.0	149
Nigeria 1989	**35**	**0**	**48**
Réunion	2	0.3	49
Rwanda	1122	15.5	3407

Country year of last report	*Annual New Cases Number*	*Annual New Cases Rate per 100,000 population*	*Cumulative Cases Number*
São Tomé	1	0.9	1
Senegal 1989	126	1.7	307
Seychelles 1989	0	0	0
Sierra Leone	7	0.2	40
South Africa	304	0.9	764
Swaziland	18	2.3	33
Tanzania	1912	7.0	8163
Togo	44	1.3	100
Uganda	**8441**	**45.8**	**21719**
Zaire 1989	**6188**	**17.2**	**11732**
Zambia	1227	14.5	4036
Zimbabwe	**3617**	**137.2**	**6716**
TOTAL FOR REGION	22487	4.3	92457

Source: WHO

Seroprevalence of HIV is a better illustration of the scale of the challenge which African countries face, now and in the future. Professor Roy Anderson and his colleagues at Imperial College, London have collated data on HIV-1 prevalence in Africa.

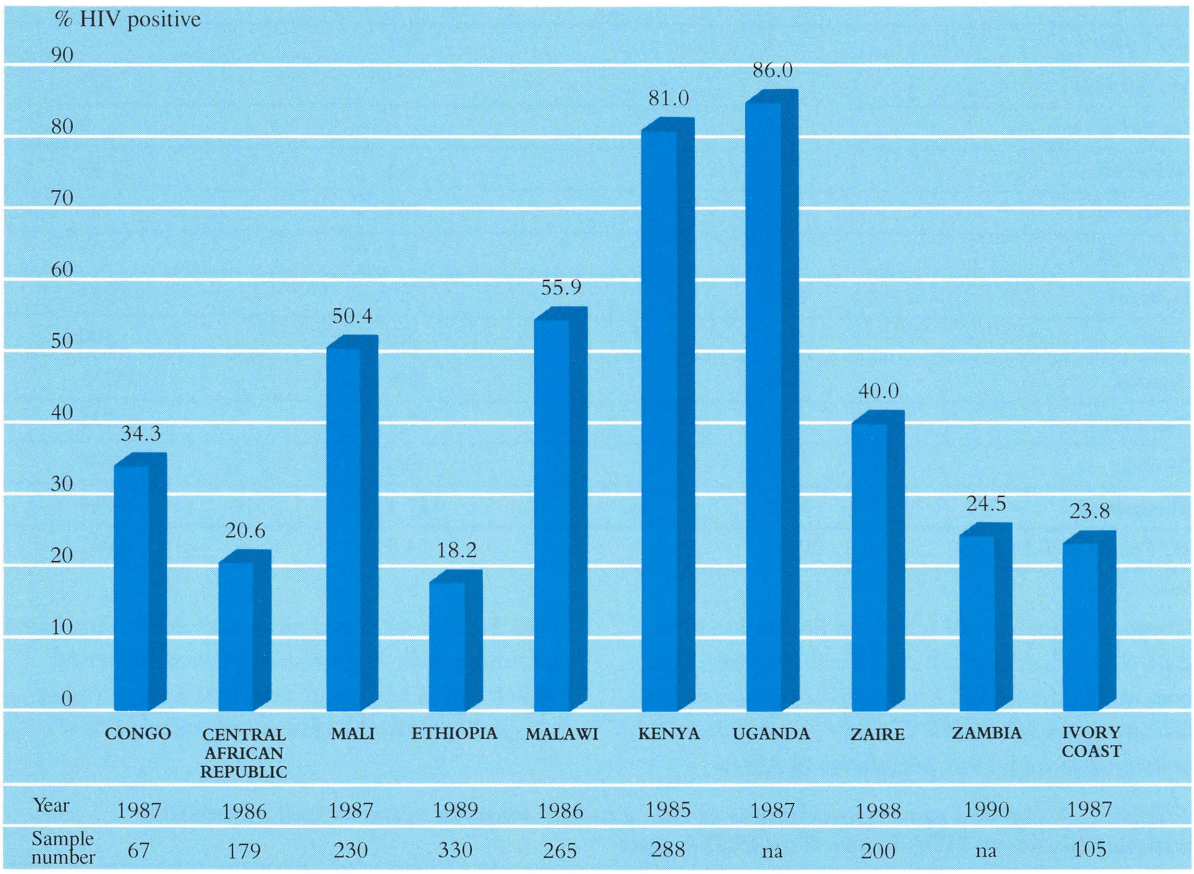
Table 2 shows weighted mean prevalence rates based on numerous serological surveys over the period 1985–1990. Where more recent data are available this is indicated in the country overviews below.

TABLE 2 **Weighted mean percentages of the 'general' sexually active urban population with antibodies to HIV-1, based on ELISA tests**

Country year of last survey	*Per cent*	*Country year of last survey*	*Per cent*	*Country year of last survey*	*Per cent*
Algeria	—	Gambia 1989	0.1	Réunion	—
Angola 1988	3.6	Ghana 1987	3.3	Rwanda 1990	21.4
Benin 1987	0.12	Guinea 1988/89	0.3	São Tomé 1988	1.0
Botswana 1987	3.0	G. Bissau 1988	0.4	Senegal 1989	0.1
Burkina Faso 1989	**7.3**	**Kenya 1990**	**3.4**	**Seychelles**	**—**
Burundi 1986	**15.2**	Lesotho 1989	0.09	Sierra Leone 1987/89	3.5
Cameroon 1989	**1.0**	Liberia 1989	0.3	Somalia 1988	0.02
Cape Verde 1988	0.04	Libya 1986/87	0.0	South Africa 1990	0.04
C.A.R. 1989	7.5	Madagascar 1989	0.03	Sudan 1989	0.3
Chad 1986	0.0	Malawi 1989	17.0	Swaziland	—
Comoros 1988	0.0	Mali 1988	0.2	Tanzania 1989	8.5
Congo 1989	**5.7**	Mauritania 1987/88	0.1	Togo	—
Côte d'Ivoire 1989	**4.7**	Mauritius	—	Tunisia 1985/87	0.08
Djibouti 1988	0.2	Morocco 1984/87	0.02	**Uganda 1989**	**15.2**
Egypt 1989	0.1	Mozambique 1989	3.4	**Zaire 1989**	**5.4**
Equatorial Guinea 1988	0.3	Namibia 1988	2.1	Zambia 1989	13.2
Ethiopia 1990	2.0	Niger	—	**Zimbabwe 1989**	**5.6**
Gabon 1988	0.5	**Nigeria 1989**	**0.3**		

Source: Anderson RM, May RM, Boily MC, Garnett GP, Rowley JT (1991) The spread of HIV-1 in Africa: sexual contact patterns and the predicted demographic impact of AIDS. Nature; **352:** 581–589.

FIGURE 1 **HIV-1 seroprevalence in prostitute populations in Africa**



Source: Centre for International Research, US Bureau of Census.

One of the characteristic features of the epidemiology of AIDS in sub-Saharan Africa is the importance of heterosexual contact with prostitutes as a source of transmission. Figure 1 shows how, in some countries of Africa, effectively the whole of the prostitute population is HIV positive.

BURUNDI

A cumulative total of 3300 AIDS cases had been reported in Burundi by 1990, though as elsewhere in Africa this probably understates the true incidence. HIV-1 seroprevalence in the sexually active population of Burundi is estimated at 15.2 per cent in Table 2, placing Burundi close to the top of the range of prevalence in sub-Saharan African countries, alongside Uganda, Malawi and Rwanda. A survey in 1989 found seroprevalence was highest in urban and semi-urban environments and lowest (less than 1 per cent) in rural environments.

Burundi was one of the first central African countries to acknowledge AIDS as a public health problem and make it a priority by implementing a national control programme. Progress towards the government's medium term objectives has led to an increased understanding of the epidemiology of AIDS, focused prevention efforts on the sexual transmission of HIV and established screening facilities at blood banks. Lack of resources, however, means there is an urgent need for healthcare and social support for AIDS sufferers and their families.

To date, care for AIDS patients in Burundi has been provided almost exclusively by hospitals. Although theoretically supported by health agencies throughout the country, lack of training of healthcare professionals and inadequate diagnosis and treatment have led to an unsustainable concentration of care in the four hospitals in Bujumbara and a few hospitals and health centres managed by non-governmental and humanitarian

organisations. Fifty per cent of hospital beds are occupied by AIDS patients, most of whom are unable to pay towards hospitalisation costs.

To address this overload, a decentralisation plan is under way which focuses on three areas: training of health workers; developing a health care guide for different skill levels; increasing awareness within all relevant public, semi-public, private, religious and non-governmental organisations.

Decentralisation, however, may provide only limited relief to the urban hospital structure because of the increasing number of patients. A day hospital where AIDS patients can receive out-patient care is essential to alleviate the pressure on hospitals. Ambulatory clinics, home nursing and community based healthcare networks must also be involved in this initiative.

Co-operation between leading physicians and the Education Department has improved training materials within the medical and paramedical curricula and led to the inclusion of special AIDS modules in secondary education. Priority needs to be given to information sources (for example, international reviews, periodicals, basic text books) which are in short supply. Audiovisual materials are only available at central level. These materials and associated networks are essential to continuing training of healthcare personnel.

CÔTE D'IVOIRE

By March 1991 a cumulative total of 6800 cases of AIDS had been reported in Côte d'Ivoire. As elsewhere in Africa, this probably understates the true incidence. HIV-1 seroprevalence in the sexually active population is estimated at 4.7 per cent in Table 2. This places Côte d'Ivoire in the middle range of prevalence among sub-Saharan countries as a whole, though it is substantially higher than average for the particular region of West Africa. Seroprevalence is estimated at 7 per cent in urban areas and 3 to 5 per cent in rural areas. In Abidjan, WHO has estimated a rise in HIV-1 prevalence from 1 per cent in 1987 to 12 per cent in 1991.

As in other sub-Saharan countries, AIDS treatment has been concentrated in the hospital sector but initiatives have been taken to shift healthcare services into the community. At the Infectious Diseases Clinic of the Treichville University Hospital Centre, three quarters of the beds are occupied by AIDS patients. To prevent prolonged hospitalisation, and to unblock beds for patients with other diseases, an 'Ambulatory Health Care and Advisory Unit' (USAC) was formed in 1989. It comprises three elements: a reception and guidance service for patients and their families; a day hospital service where patients receive medical care prior to returning to their own homes; a pharmacy which distributes, free of charge, medicines provided by a local non-governmental organisation. Within a year, 600 patients were treated by this single unit. This figure does not include their partners, spouses and children who are also able to consult the unit for information.

This innovative experience is being shared with other hospital centres. Training of medical and social staff and voluntary workers to care for and support both patients and their families is undertaken through seminars held within the three main university hospital centres in the Côte d'Ivoire. Despite the existence of new centres, an increasing number of patients is still being directed to USAC, rather than being cared for where the diagnosis was first made.

CAMEROON

By April 1991 a cumulative total of 429 cases of AIDS had been reported in Cameroon. In Table 2, seroprevalence in the sexually active population of Cameroon is estimated at 1.0 per cent, placing Cameroon close to the bottom end of the range for sub-Saharan African countries, alongside Nigeria, though this is probably an understatement. Even among prostitutes seroprevalence is low, estimated at 1.6 per cent, and seropositivity in the general population remains very low in rural areas.

As in other African countries, there is a perceived need for AIDS related training initiatives at all levels.

CONGO

By the end of 1990 a cumulative total of 2400 cases of AIDS had been reported in Congo. HIV-1 seroprevalence in the sexually active population is estimated at 5.7 per cent in Table 2, placing Congo in the middle range of prevalence among sub-Saharan countries. A much higher rate, however, 17.2 per cent, has been reported among blood donors.

As elsewhere in Africa, healthcare for AIDS patients is excessively concentrated in hospitals. There is at present no network of hospital doctors and general practitioners which could facilitate transfer of patients to care in the community. Many doctors in the community are unwilling to treat AIDS cases because of their fears as well as lack of relevant skills.

Current initiatives include a day hospital which is expected to be operational in 1992 and to serve as the centre for creating a hospital/community network of healthcare professionals and families. It is essential that this is combined with permanent training systems.

GHANA

The first 26 cases of AIDS in Ghana were reported in 1986. By August 1991 a cumulative total of 2700 cases had been reported. As elsewhere in Africa, this probably understates the true incidence. Unfortunately, attempts at systematic surveillance have been limited. HIV-1 seroprevalence in the sexually active population is estimated at 3.3 per cent in Table 2, placing Ghana in the middle range of prevalence among sub-Saharan countries. Among people attending sexually transmitted disease (STD) clinics, seroprevalence of 5.5 per cent has been reported.

There was a large preponderance of women among the first AIDS cases to be reported — eleven females to every one male — but the sex ratio is now becoming more even. Also, in the early days, travel outside Ghana was a major risk factor in contracting AIDS. More recently reported AIDS cases have generally been contracted within Ghana.

A National Programme Secretariat has been established to address the challenge of AIDS and regional agencies are now being encouraged to develop their own programmes. Efforts are being made to involve all relevant groups and individuals, including religious leaders, in educational campaigns. Within the healthcare sector, AIDS prevention initiatives are being incorporated into existing programmes for the control of tuberculosis. An important concern is to provide some degree of support for AIDS patients, including basic necessities such as food, soap and shelter. Oral rehydration is also offered sometimes. Some of the first female patients to contract AIDS were given financial support or helped to set up cash generating activities such as bee keeping or bread making. This helped women with no other means of support to sustain themselves without recourse to prostitution.

There are many myths to be dispelled which stand in the way of effective education. For example, there is a still prevalent belief that AIDS can be caused by a magic spell.

A poor healthcare infrastructure is another factor in the spread of AIDS. For example, blood is rarely stored and is typically transfused immediately from a donor. Rapid blood testing is essential.

Clinical management of full-blown AIDS soon hit economic constraints in Ghana. Some hospitals have tried to recover costs of treatment from patients, but since most patients do not have sufficient resources this has led hospitals to cease treatment altogether. Home based care is now encouraged, in part, as a means of reducing costs — both for hospitals and for relatives who would otherwise have to travel to hospital each day to feed and care for patients.

There is massive scope for effective training and education in Ghana, but a lack of resources at most levels.

Hospitals lack guidelines for the basic principles of infection control and training programmes are needed for hospital personnel.

Social support for patients also requires special training which is in short supply. Being time consuming, doctors usually leave social support to nurses and other health workers. In the community, groups such as Red Cross are being encouraged to provide counselling and support.

Finally, research is needed into patterns of sexual behaviour and how they may be modified by sex education. This is often more difficult in the local language than in English. One of the major problems is young people who leave school and turn to prostitution for income.

KENYA

The first 12 cases of AIDS in Kenya were reported in 1984. However, tests on stored blood samples from STD clinics have found the first HIV infections go back at least as far as 1981. By September 1991,

19,000 cases of AIDS had been reported though, as in other African countries, reporting probably greatly understates true incidence. In Table 2, seroprevalence is estimated at 3.3 per cent of the sexually active population in Kenya, placing Kenya in the middle range of prevalence for sub-Saharan African countries, though other sources suggest overall seroprevalence may be as high as 6.5 to 8 per cent. Samples taken at antenatal clinics indicate seroprevalence varying between zero and 11 to 17 per cent among pregnant women. Seroprevalence among prostitutes is also very variable. It is believed the average is now between 20 and 30 per cent, though a figure of 81 per cent was recorded for a population of Kenyan prostitutes as long ago as 1985, Table 3.

The government set up the first National AIDS Committee in 1985. In 1987, the Minister of Health took the chair and in 1990 it was reconstituted into a committee with multisectoral representation from all government ministries affected by AIDS.

The first priority of the committee was to make blood transfusions safe as this was seen as the single most effective approach to controlling (in part) transmission of AIDS. All blood supplies are now screened and blood transfusion supplies are believed to be free of infection.

As sexual transmission is the main source of infection (though less easy to control) the second priority was to concentrate on 'Information, Education and Communication' (IEC) programmes. Between 80 and 90 per cent of the Kenyan population is now said to be aware of what AIDS is, how it can be acquired and how it can be avoided. However, there is little evidence that this knowledge has changed behaviour. AIDS is still increasing in Kenya.

IEC programmes are aimed mainly at three groups, members of the armed forces, schoolchildren and young people not enrolled in schools. Radio programmes, pamphlets and meetings have all been used as means of promoting awareness.

Management of symptomatic AIDS is placing an enormous strain on Kenyan medical services because of lack of human resources. Between one third and one half of all hospital admissions and out-patient attendances are attributed to AIDS. As elsewhere in Africa, HIV infection with tuberculosis at the same time as AIDS is adding to the strain on medical services.

More training resources are urgently needed for healthcare personnel at all levels. These resources are needed for counselling patients and relatives as well as for the clinical requirements of AIDS patients, which differ from those of patients with other diseases. Laboratory staff need continuing training and there is also an important need for physician training. Despite the increasing incidence of full-blown AIDS, some doctors have still not seen a case and may not fully realise the pressing nature of the problem.

Overall, IEC programmes in Kenya need to be intensified. Patient care must be rationalised because of resource constraints. For example, antiviral compounds against AIDS will be available to a limited population only, not for general use.

NIGERIA

AIDS was first reported in Nigeria in 1986, much later than in most other African countries. Only 100 cases have been reported to date, partly a reflection of the system of notification. In Table 2, 1989 seroprevalence in the sexually active Nigerian population is estimated at 0.3 per cent. Later data from sentinel points show higher seroprevalence at 0.8 per cent in August 1991, but this still leaves Nigeria at the bottom end of the range of sub-Saharan African countries. Seroprevalence at STD clinics is low, at 1 per cent. It also remains relatively low among prostitutes, compared to other African countries, with a current seroprevalence estimate of 10 per cent in major cities.

It is only recently that sytematic efforts have been made to arrest the spread of the disease. The control of sexually transmitted diseases and AIDS is now coordinated into a single programme. The federal National AIDS Committee, a multidisciplinary body chaired by the Minister of Health, meets twice yearly. Increasingly, however, Nigeria's AIDS programme is being decentralised to similar, multidisciplinary committees at state and local government levels. The provision of safe blood is the responsibility of the federal authorities for tertiary healthcare and of state authorities for other levels of healthcare.

The main concentration of government effort in Nigeria has been on 'Information, Education and

Communication' (IEC) activities. These focus on efforts to understand and change sexual behaviour. Attempts are being made to encourage marital fidelity on the one hand and the use of condoms on the other. There are also plans for community counselling and in 1992/1993 epidemiology and surveillance activities will be intensified.

Aid in the form of survey equipment and reagents has been supplied by Britain while the European Community is funding a sexually transmitted diseases (STD) control programme. The World Health Organisation is providing technical support. There is a lack of trained personnel, aggravated by emigration to wealthier countries, and a need for better training to make up the deficit. There is also a need for management support.

There is still a sense of complacency about AIDS in Nigeria, which needs to be overcome to mobilise resources. Because the disease is so much less prevalent than in other African countries, the threat which it presents is not fully recognised.

UGANDA

Uganda is one of the countries in Africa most affected by AIDS and now faces a full scale pandemic. Over 25,000 cases of AIDS have been reported and this is probably only one third of the true number. HIV-1 seroprevalence in the sexually active Ugandan population is estimated at 15.2 per cent, Table 2, placing Uganda close to the top of the range of prevalence in sub-Saharan African countries, alongside Malawi, Burundi and Rwanda. The great majority of Ugandan prostitutes are HIV positive. For the past two years, reports from antenatal clinics have indicated a seroprevalence of about 24 per cent among pregnant women. Data over two years suggests the situation may possibly be stabilising. The only group to have avoided significant rates of infection are school aged children. By contrast, infants and pre-school children are often infected by their mothers.

There have been three phases in the emergence of AIDS as a public health issue in Uganda. Between 1981 and 1983 many cases were secretly reported. For the next two years there was a political ban on discussion of AIDS. Then, in 1986, the government publicly recognised AIDS as a public health problem. Debate now is dominated by the rising death rate and the massive social and economic disruption being caused by the disease.

Neither the medical nor the social services can cope with AIDS. There are even difficulties in providing shelter and food for patients. In addition there are now problems with land inheritance and it seems possible that the whole family structure may break down. AIDS is more prevalent among women than among men and this further threatens to destabilize the family since women often play the dominant role in family life.

In 1986, when the government publicly recognised the problem, a National AIDS Council was established. AIDS awareness is now close to 90 per cent, though there is not yet any clear evidence of changes in behaviour. Through community efforts, almost every household has been exposed to IEC sexual programmes which are given the highest priority in addressing AIDS. The second priority is to prevent sexually transmitted diseases which facilitate spread of the AIDS virus. STD programmes are also important because they provide a way of monitoring sexual behaviour. There is also a local initiative to provide reusable syringes, which are felt to be preferable to disposable syringes that may not always be properly destroyed.

Tuberculosis has always been a health problem in Uganda. Incidence has greatly increased as a result of lowering of the immune response due to AIDS. TB is dealt with through case finding and treatment. Unfortunately, treatment of TB requires short but expensive courses of chemotherapy.

There is an urgent need in Uganda for training at all levels. There is also a chronic shortage of medical and professional human resources. Initially, the most cost effective way to address training needs is believed to be short courses for large numbers of workers, to develop a critical mass of trained personnel.

ZAIRE

Cumulative reported cases of AIDS reached 11,700 in Zaire by 1990. As elsewhere in Africa, this understates the true figure. Seroprevalence is estimated at 5.4 per cent of the sexually active population in Table 2, placing Zaire in the middle range of prevalence for sub-Saharan African

countries. At 1 per cent in 1988, seroprevalence in rural areas was substantially lower than the country average. A rate of 27 per cent was found among prostitutes, also in 1988.

Despite a relatively moderate exposure to AIDS, compared for example with Burundi, Zaire has been one of the least successful of the francophone countries in addressing the challenge of AIDS.

AIDS care is predominantly provided by hospitals. Sixty per cent of AIDS patients admitted to Mama Yemo Hospital in Kinshasa die there without being discharged. The government has been unable to establish the necessary outpatient support facilities for AIDS patients. Such facilities are essential because AIDS patients take up a high proportion of available beds and crowd out patients with other conditions.

Blood transfusions remain unsafe. To date, none of Kinshasa's three blood banks has been able to screen blood donations.

In the absence of any national training policy, no network exists between doctors working in the main university hospital centres and those in the private medical sector in the community. Physicians are overwhelmed by their hospital case loads and are unable to participate in AIDS training programmes for healthcare workers. The absence of appropriate skills in the community helps to explain the demand for local healers, whose intervention may put the patient's life at risk.

ZIMBABWE

Cumulative reported cases of AIDS reached 9000 in Zimbabwe by September 1991. The true figure, however, may be about 30,000. Seroprevalence is estimated at 5.6 per cent of the sexually active population in Table 2, placing Zimbabwe in the middle range of prevalence for sub-Saharan African countries. It can reach about 50 per cent among patients attending urban STD clinics. Rates for women attending antenatal clinics range from 5 per cent in rural sites to 18 per cent in Harare. In Harare's tuberculosis hospital, seroprevalence rates of 40 to 60 per cent have been reported.

The Zimbabwe government introduced a short term AIDS plan in 1987, followed by a 5 year plan in 1988. The objectives have been to prevent infection, reduce the psychological impact of the disease and provide treatment, care and support. This has involved 'Information, Education and Communication' (IEC) activities, counselling, epidemiological surveillance, clinical management and home-based community care. Initiatives to improve blood transfusion safety have led to a drop in HIV positivity among blood donations from 4.9 per cent in 1989/90 to 3.7 per cent in 1990/91.

A start has been made to training personnel in the most critical areas of work. Since 1990 there has been sentinel testing of seroprevalence in twelve districts in eight provinces. Six health information officers were trained in HIV/AIDS data management in 1990. Twenty-two health personnel were trained in surveillance and research in 1991 and five health workers attended a regional workshop in the same year.

The primary target of the AIDS education programme has been children under 16, who constitute half the total population. Promotional materials such as videos, films, pamphlets, T-shirts with a message and calendars are being used in the youth programme. There is an active 'Training of Trainees' programme. Surveys indicate a gradual increase in awareness of the relevant issues, though there is still much misinformation and patterns of sexual behaviour appear not to have changed.

Women are a second target group for IEC programmes. Many women's organisations have expanded their activities to include HIV/AIDS education. Programmes for the workforce generally have been introduced in commercial farms, for truck drivers and for the professions. A network of Health Programme Facilitators has been formed among employees in the public and private sectors, each member of the network co-ordinating AIDS education in his or her own workplace.

AIDS training has taken place for nurses and health workers. All hospitals provide for some aspects of HIV/AIDS education and counselling. There is also an active home-based community care programme.

Overall, however, there remains much misinformation about AIDS and its mode of transmission. There is still a lack of systematic epidemiological surveillance and a lack of both training and equipment.

From the country overviews, it is apparent that the constraints faced by many African countries largely relate to their level of economic development. Their lack of financial and human resources, medical infrastructure, delivery systems and adequate information all limit the effectiveness of healthcare in Africa generally. These factors also make it difficult to manage the AIDS crisis. Given these constraints, the 'solutions' applicable to industrialized countries may not be relevant, appropriate or sustainable in Africa.

For example, AIDS drugs, like many other medical resources, are neither affordable nor widely accessible to these countries without support from donor agencies. More important, clinical monitoring is essential for these drugs due to adverse reactions, resistant strains of HIV and compliancy problems. Thus without the requisite technical expertise and supporting medical infrastructure the benefits of drug treatment would be extremely limited.

Medicines represent only one component of the solution to AIDS management. Already, a range of antibiotics available in many African countries can be used to treat opportunistic diseases, sexually transmitted diseases and to alleviate suffering of AIDS patients. These drugs provide an immediate support measure for health professionals while AIDS vaccines and drugs suitable for conditions in these countries are being developed. More critical is the existence of health care systems sufficiently developed to utilize such treatments.

Hence a more effective use of available resources is to develop and strengthen the ability of African health care systems and institutions to manage the AIDS pandemic through prevention, education and training programmes. In short, such activities entail information dissemination, technical support and management skills development.

A crucial point which emerges from many of the country overviews is the excessive concentration of AIDS care in the hospital sector. In some countries, such as Burundi and Zaire, up to half of all hospital beds are occupied by AIDS patients and there is a real risk of crowding out patients with other conditions needing hospital treatment.

The need to develop alternative care delivery networks in the community is widely recognised and widespread efforts are being made to decentralise care. None of the countries involved in the Dakar discussions has yet achieved a substantial shift away from hospital based care, though Zambia has developed and evaluated a number of home-based care systems which offer models for possible application in other African countries.

Promising innovations in AIDS healthcare delivery include the development of a day hospital in Congo, which is expected to become operational in 1992, as well as the 'Ambulatory Health Care and Advisory Unit' (USAC) set up in 1989 in Côte d'Ivoire. Experience with these and other innovations needs to be monitored and lessons disseminated throughout the region.

There are some elements of AIDS prevention which have been successfully implemented by some African countries but not others. Blood transfusion is now believed to be safe in Kenya but not in most other countries. Strategies which have proved highly effective in securing a safe blood supply in developed countries are difficult to implement in many central African states. However, to the extent that some have achieved safe transfusion, this cannot be entirely a development issue in which econominc resources are the key constraint.

Educational programmes have also proved to be more effective in some countries than others. AIDS awareness is high throughout most of central Africa according to WHO surveys but misconceptions and ignorance remain in some countries including, for example, Zaire and Zimbabwe. Again, the educational achievements of some developing countries may provide a realistic goal for others. The fundamental issue, however, which has not yet been answered in Africa, is whether greater awareness leads to safer sexual behaviour and, if it does not, why not. There is a need for results from well designed social and epidemiological research which can shed light on this question in the context of African cultures.

Training emerged as perhaps the single most important issue for the countries participating in the Dakar sessions. The lack of training resources for AIDS programmes at all levels — medical care, social support, counselling, education, technical services — was perceived as an important constraint on the achievement of objectives. This is an area where there is substantial scope for donor agencies to offer practical and urgently needed assistance.

Information, Education and Communication (IEC)

The concept of 'Information, Education and Communication' (IEC) originated in relation to family planning but has now also been applied to the control of AIDS. It is a basic principle which underpins more direct steps to prevent infection and is the essential ingredient of any overall policy to control the disease. This section outlines some of the more important opportunities for action that exist in IEC.

Physician education can be developed to help to improve the control of AIDS in Africa. Knowledge of AIDS and HIV is constantly evolving and indeed in countries such as Nigeria where the epidemic is at an early stage, few physicians may be fully aware of the ways in which they can help to avoid the spread of the disease. It is especially important that their education should be encouraged at this stage because it is in the early phase of the epidemic that control measures can be most effective.

One of the important constraints on progress is the absence of well developed professional networks in African countries linking hospitals, where AIDS treatment tends to be concentrated, and the wider community. A major proposal arising out of Dakar discussions was to promote network relationships through the creation of 'AIDS circles' to bring together hospital doctors, general practitioners, nurses, psychologists and other paramedical workers. The circles would be a focus for training meetings as well as informal contact between professionals. They would also serve as a network through which national or regional AIDS initiatives could be mediated. The coordinator for each circle would have at his or her disposal an international bibliography, as an essential backup for treatment and care of seropositive patients or AIDS sufferers. The pharmaceutical industry, with its organisational and communication skills, could play a major part in setting up and supporting these AIDS circles.

In addition there is the opportunity for the creation of training modules which would bring together the various teaching methods necessary for the efficient running of the circles, such as:

- A practical behavioural guide for the treatment of AIDS in Africa
- Media: slides and transparencies
- Course books
- Video tapes covering the whole of the pathology on a system by system basis

Finally, it should be possible to identify all the local non governmental organisations likely to be involved in a national AIDS circle initiative and suggest their federation in order to enhance their efficiency.

These general recommendations on AIDS circles, originating mainly from the French speaking group in the Dakar roundtable discussions, lead to the specific proposals set out in Box 1. In addition to all of the general opportunities and recommendations described in this monograph, those set out in Box 1 indicate some of the specific ways in which the challenge of AIDS in Africa can be met by education and training.

Another important IEC opportunity is the creation of an interstate training structure for personnel involved in the healthcare and support of AIDS sufferers. This should reflect the individual requirements of each country and should benefit from the skills and the experience of specialists from each of the states concerned. It should not be confined solely to the training of doctors but should also be open to nurses and other paramedical professional groups. In francophone Africa, the involvement of universities could be achieved through the Conference Internationale des Doyens de Médécin d'Expression Francaise (CIDMEF) [International Conference of French speaking Deans of Medicine] and through Université des Reseaux d'Expression Francaise (UREF) [University of French speaking Networks]. Similar arrangements could be made for English speaking Africa.

Training of laboratory technicians is a specific opportunity for interstate training structures. 'Out of country' training can play an important part and a number of pharmaceutical companies have acted as hosts to technicians from the African continent in order to give them wider laboratory experience. There is of course the problem that equipment used in the more advanced countries may not always be available in Africa and therefore in some cases training within the African continent (although not necessarily in the technician's own country) may be more valuable.

The Dakar discussions emphasised the chronic shortages of medical manpower in Africa, particularly in rural areas, and it was agreed that control of the AIDS pandemic cannot be approached through the medical profession alone. There is a need to expand training and education at all levels for nurses, the ancillary professions and health workers. In this context, there is a particular need for support for day care centres and similar innovative forms of healthcare delivery that are now being developed in some African countries. Day care centres have many facets, serving as patient care facilities, outreach and counselling centres and points of patient information. Each of these elements has its own special training needs, which should ideally take account of the lessons emerging from early examples of this relatively new form of provision.

There is also scope for extending training outside professional circles. There are opportunities, on a country by country basis, for training seminars for traditional doctors so that they become vectors for providing quality information in rural and urban communities which are usually in close contact with traditional healing practices.

In the Dakar discussions it was suggested that sexual attitudes and behaviour can be different in Africa from the Western world. Outside agencies, therefore, if they are to play a constructive part in African sex education, must understand African sexual attitudes and patterns of behaviour. Once again the two way communication which would be possible in the proposed AIDS circles should be invaluable in this connection.

Prevention

a) Condom promotion and safe sexual practices

Education about safe sexual practices is essential for the control of AIDS in Africa. The use of condoms has been the single most effective approach to controlling the spread of the disease. Participants in the Dakar discussions thought that it would be very difficult to change sexual practices but that it was possible to make sex relatively safe through the regular use of condoms. In contrast to Africans' high level of awareness of sexual transmission of AIDS, WHO surveys have found variable and often very low awareness of condoms as a means of preventing infection. In some countries, many sexually active people have never heard of condoms and among those who have heard of them, a surprisingly high percentage think condoms can actually transmit AIDS. There is clearly, therefore, an awareness barrier to be overcome.

There are two areas in which education can help. The first is simply in explaining and encouraging widespread use of condoms as an essential lifesaving element in African sexual behaviour. Physicians, nurses, and health and social workers can promote proper use of condoms. Widespread channels of distribution for condoms make them appear as a normal aspect of everyday living.

Education about safe sexual practices can discourage promiscuity and multiple sexual partners. It was agreed that this aspect of sex education must not be neglected. Religious institutions could play an important part in promoting sexual self restraint. AIDS circles must promote education amongst all those concerned about the importance of regularly using condoms. They must discuss ways in which condoms should be distributed both through health service channels and, perhaps more importantly, through normal trade channels. Condoms should be as universally available as other everyday consumer items, making them available through ordinary trade channels both in the towns and in rural areas. One suggestion was that the World Health Organisation should purchase condoms in bulk and arrange for their distribution into normal trade channels.

Historically, the use of condoms in sub-Saharan Africa has been considered an 'unnatural' aspect of sex, which is considered as an act of procreation. Nonetheless prejudices may be overcome through education. Health care professionals could be instrumental in carrying out this education.

One specific subject which came up for discussion in the anglophone group at Dakar was the role of the religion in AIDS related education. It was felt to be extremely important to get the churches to understand the importance of 'safe sex' and the use of condoms if they were to add their very influential voice to the general programme for the control of AIDS.

Education is urgently needed among prostitutes. They must be taught that the use of a condom gives 'added status' to the sex act and must be educated to refuse sex without protection.

One specific area where education is needed is in the proper use of the condom. It is not sufficient for condoms to be available and for the public to be told of their importance, if they do not understand how condoms are used. Health agencies or commercial tradespeople should not be embarrassed to describe how and why they should be used. Alternative ways to communicate condom use to illiterate populations should be developed.

b) Sexually transmitted diseases

Sexually transmitted diseases (STD) are strongly associated with infection with HIV. Thus, one approach to control the spread of AIDS is also to control other STDs.

An important factor is to make routine antibiotics available as cheaply as possible. It is also important to educate physicians and health workers on the priority of detecting and treating STDs.

In this context, pharmaceutical manufacturers have offered through the International Federation of Pharmaceutical Manufacturers' Associations to supply generic antibiotics at preferential prices provided it can be guaranteed that these supplies are not then re-exported or diverted into other markets. Thus far, because of these difficulties, only limited supplies of low priced medicines have been supplied to the less developed countries. One recommendation in relation to antibiotics for STDs is to explore alternative ways to purchase/provide low priced products available through official channels.

There was anecdotal evidence, from Uganda for example, that the widespread use of condoms has led to a reduction of STDs. However no firm evidence is available. This is an area in which the pharmaceutical industry's expertise in epidemiology could be useful to the health authorities in Africa.

c) Tuberculosis

TB is re-emerging as a greater problem as a result of the spread of AIDS. The availability of antitubercular medicines means that the new epidemic of tuberculosis can effectively be controlled.

The price of short term treatment with the latest and comparatively more expensive antitubercular agents can, however, present a problem, particularly if the patient is expected to pay some of the cost.

However, there is an economic pay off from the control of tuberculosis which should put such costs into perspective and encourage health authorities to provide effective treatment from public funds. This will not, of course, help to control the spread of the AIDS pandemic itself but it will improve the handling of one of its more easily manageable consequences.

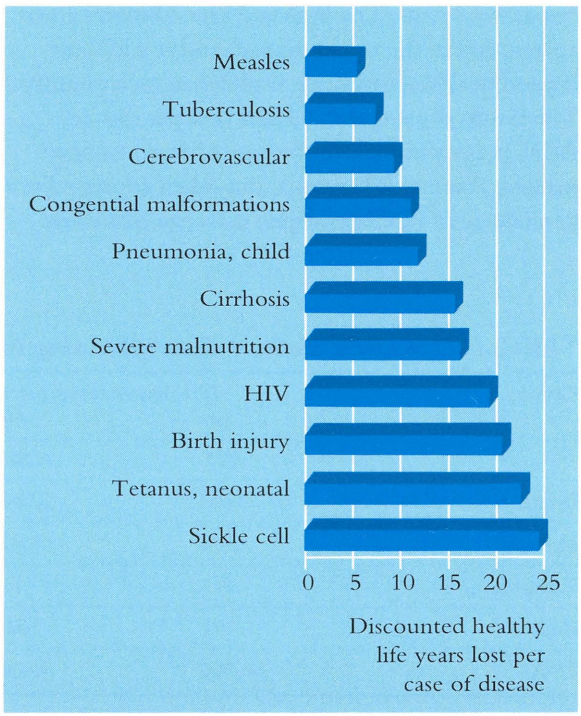
The Socio-economic impact of AIDS

Limited resources make it essential that health care is provided in as cost effective a way as possible. In a recent review of economic research on AIDS in Africa, Stefano Bertozzi concludes that:

'the limited evidence available suggests that prevention of HIV infection is among the top priorities in any African country with a significantly high incidence of infection.'

The conclusion is based in part on data from the Ghana Health Assessment Project which compares the 'discounted healthy life years' (DHLYs) lost per case of HIV infection with those for other important diseases. The cost per case of HIV (in lost healthy life years) is fourth highest after sickle cell anaemia, neonatal tetanus and birth injury, Figure 2.

FIGURE 2 **Discounted healthy life years lost per case of disease**



Source: S M Bertozzi Combating HIV in Africa: a role for economic research. AIDS 1991, 5(suppl 1): S45–S54. Current Science.

The calculations in Figure 2, in fact, greatly understate the overall cost in life years because they refer to the average 'index' case only. Critically, they ignore the 'reproduction rate', that is the number of secondary cases infected per index case — who would not otherwise have been infected. The reproduction rate for HIV has been estimated at 19.5 by Over and Piot. It is much higher than, for example, measles, because in the case of that communicable disease there is a higher probability that secondary cases would have been infected elsewhere. The priority that AIDS prevention merits arises primarily from its high reproduction rate and the massively increased costs that flow from that.

The costs of AIDS include not only life years lost but also the healthcare resources, including doctors, nurses and ancillary workers in hospitals and the community, absorbed in the treatment and care of people with AIDS and their families. In some cases, like Kenya and Uganda, as many as 50 per cent of hospital admissions are AIDS related. In a study carried out for the World Bank, Over and Piot estimated the lifetime healthcare costs of AIDS patients in developing countries in Africa and elsewhere, Table 3. The estimates were based on expert opinion, applying local health service utilisation patterns to estimates of in-patient and out-patient costs. The high and low estimates given correspond to the most comprehensive and most limited healthcare options available in each country. The results show that the dollar cost per case of AIDS is fairly modest in the two African countries studied, Zaire and Tanzania, but when expressed as a percentage of GNP per capita it is clear that those countries where a significant proportion of the population is seropositive will face massive healthcare costs as seropositivity turns into full blown AIDS.

It would be very difficult to try to put a figure on the overall economic cost of AIDS. These are serious conceptual problems in doing so for subsistence economies where much of the exchange of goods and services takes place by barter. There are also too many areas of uncertainty, for example regarding the impact of AIDS on economic development and the effect of AIDS in undermining social and family structures, in those countries where rates of infection are very high. Because of this, estimates of the potential benefits from AIDS prevention, and how they compare with alternative uses of resources, remain unrefined. Nevertheless, there is sufficient evidence of an economic payoff from effective prevention of AIDS for the priority in economic research now to be shifted, as Bertozzi proposes, away from defining potential benefits and towards cost effectiveness studies which seek to answer the question: 'what are the specific interventions which will give the best marginal returns in terms of cases prevented per dollar?'

The cost effectiveness of different forms of healthcare intervention is a subject on which the international pharmaceutical companies would be able to make a special contribution based on their own expertise. The pharmaceutical industry, for example through organisations such as the Office of Health Economics and its equivalents in other countries, has done much work in developing both the theory and practice of costing for individual diseases.

TABLE 3 **Estimated lifetime costs of treating AIDS in selected developing countries, 1988**

Country	*HIV-related treatment cost*		*Cost as per cent of annual GNP per capita*	
	low	*high*	*low*	*high*
	$US	$US	%	%
Brazil	6,000	12,000	243	485
Mexico	3,594	8,033	173	387
Tanzania	111	673	94	570
Zaire	141	1,689	79	949
USA	60,000	90,000	302	454

Source: Lorna Lynn, Kevin Schulman and John Eisenberg: The Pharmacoeconomics of HIV Disease. PharmacoEconomics 1 (3): 161–174, 1992, using data from M Over and P Piot: HIV Infection and other sexually transmitted diseases. In Evolving Health Sector Priorities in Developing Countries. Edited by Jamison DT and Mosley HW. New York. Oxford University Press for the World Bank, in press, 1992.

The Role of the Pharmaceutical Industry

There is a role for cooperation between international agencies, local health care authorities and pharmaceutical manufacturers in providing AIDS related health education to the population as a whole. The pharmaceutical industry has, of course, a central role to play in research and development to produce new, effective and affordable vaccines and medicines. Its commitment to continuing research is vital. However, high technology medicine and paliative care agents are only one, long term, approach to meeting the challenge of AIDS. And even on the most optimistic forecasts, vaccines may not be available for use in the near future. Thus the current, practical role of the pharmaceutical industry will be very largely in sharing its management and communication skills in the fight against AIDS. There is much that the pharmaceutical industry can contribute in this respect. The following proposals therefore fall into this category, rather than relating to the supply of medicines themselves.

The international pharmaceutical industry has a long history of expertise in informing, educating and communicating with its various publics and, in particular, with the medical profession itself. Thus it is ideally placed to help to develop a programme of IEC in relation to the AIDS pandemic in Africa. The educational work of the research based pharmaceutical industry is in no way confined to informing doctors and others about its new products. It has developed a much wider educational role. The Office of Health Economics, which was set up by the British pharmaceutical industry in 1962, is an excellent example. It has produced and publicised many studies on the general epidemiology of diseases, their costs and new ways of tackling their control. It has also examined the general organisation of health care systems and made constructive suggestions on how they could be made more efficient. It is precisely in this sort of way that the international research based pharmaceutical companies can contribute to the control of AIDS in Africa.

At a practical level, participants at the Dakar roundtable discussions reported on ways in which the industry in their countries is already contributing to physician education. This includes courses run in the country itself and support for African physicians to undergo spells of training in more advanced countries. The pharmaceutical industry also has a good record in the training of laboratory technicians, where a number of companies have acted as hosts to technicians from the African continent.

Apart from purely technical support, there are two other areas in which the pharmaceutical manufacturers can share their expertise with health workers involved in the AIDS problem. The first relates to the industry's organisational skills.

It was strongly emphasised during the Dakar discussions that the pharmaceutical industry is in a very strong position to share its own excellent organisational skills and methods with local health authorities and international agencies. Although both of the latter do of course have their own management skills, these will in many cases be less fully developed than the management methods based on information technology which are already in use in the pharmaceutical industry. Small seminars to discuss ways of organising services could play an important part in helping local health workers to become more effective. In some cases even data processing equipment which has become obsolete in pharmaceutical companies could be donated to African health workers. On the educational side, the communication skills which are very highly developed within the industry can again be shared in discussion groups and at local meetings. It is very important for the pharmaceutical industry to be seen to be an integral part of the health care system as a whole and not simply as developers and manufacturers of medicines. This wider health care role is very well developed in many of the industrialised countries and it was clear from the discussions in Dakar that more can be done in this connection in African countries, where the shortage of trained manpower is such a serious health care problem. The pharmaceutical industry's communication skills will be particularly valuable in promoting and supporting the AIDS circles discussed earlier.

AIDS related health education of the population as a whole is the other area where pharmaceutical manufacturers can usefully share their expertise, in cooperation with international agencies and local health care authorities. Once again this is an area in which pharmaceutical manufacturers already have

considerable experience. They often provide, for example, general health education leaflets and booklets with only the most indirect references to their products and, in many cases, with no specific product information at all. Pharmaceutical employees are also skilled in giving general health education lectures and seminars. In all of these ways, the industry in Africa can help to educate the public as a whole on the ways in which to prevent the spread of AIDS.

The pharmaceutical industry must, however, be especially sensitive in its contribution to the AIDS control programme as a whole. It undoubtedly had very many skills which it could use to advance physician training, to support health professionals and to encourage the education of the general public. The pharmaceutical industry now fully accepts its international responsibilities. The positive role of the international pharmaceutical industry in this connection was fully recognised at the Dakar discussions.

CONCLUSIONS

AIDS presents very different challenges in Africa compared to those of more economically developed countries given the lack of medical resources, training and an adequate medical infrastructure. The virus is primarily transmitted through sexual practice, with direct transmission through blood products playing a decreasing role in most African countries. In addition, perinatal transmission is a major source of infection.

In some countries the pandemic is so well established that the whole social and economic structure of the country is at risk of breaking down. In others, notably Nigeria, the epidemic is at a much earlier stage and the opportunities for prevention and control are very much greater. But ironically in those countries with the greatest opportunity to arrest the spread of the disease, there is also some evidence of greater complacency and ignorance.

This fact underlines the scope for the research based international pharmaceutical industry to share its expertise in management and communication techniques with government organisations and international agencies which are trying to control the spread of infection.

The Dakar discussions indicated that safer sex, primarily through use of condoms, is a more achievable goal than fundamental modification of sexual behaviour in African countries. But if safer sex is to be practiced it can come only through more effective information, education and communication (IEC). This appears to hold the key to the control of the African AIDS pandemic. The prevention and treatment of the sexually transmitted diseases will also reduce the spread of AIDS.

Hence the Dakar discussions centred on ways in which communication could be made more effective. One of the most specific recommendations was to set up AIDS circles under the auspices of the Pan-African Organisation to Fights AIDS (OPALS). In addition the whole armamentarium of education and training could be employed to help physicians and other health workers to tackle the challenge of AIDS more effectively.

But as well as trying to control the further spread of AIDS, there is also the challenge of caring for existing cases who, in some parts of Africa, represent one half of the total hospital populations. Here another specific suggestion was support for the further development of day hospitals and similar innovative models of health and care delivery. These could reduce the burden on existing inpatient and outpatient facilities and also possibly reduce the burder of carers in the community.

From all of this, it is clear that there is massive scope for helping government authorities and international agencies to tackle the challenge of AIDS in Africa. The discussions at the Dakar roundtables themselves were of great value and it is to be hoped that they will lead to further initiatives in which the international pharmaceutical industry can share its expertise with all of the other bodies concerned with the control and treatment of AIDS in Africa. This monograph itself will perhaps help to show the way in which the challenge of AIDS in Africa can be met by training, education and prevention.

BOX 1 **Proposal for AIDS circles and supporting materials**

1.1 The drawing up of a practical education guide, bringing together the experience of the clinicians from the eleven countries represented at the Dakar roundtable and intended to facilitate decision making by doctors and nurses working both in urban and rural areas. The dissemination of this guide could be achieved through the national AIDS circles.

1.2 Creation of a comprehensive VHS video tape based tutorial bringing together African and international data on:
- epidemiology
- virology
- natural history of HIV 1 and 2 infection
- cutaneous symptoms
- pulmonary symptoms
- neurological symptoms
- digestive symptoms
- ophthalmological symptoms

2 A quarterly network bulletin drawn up from information provided by the field teams to the OPALS circle. Bulk copies could be distributed to each circle. The bulletin would contain summaries of scientific articles, information on international conferences, unabridged articles and information on the activities of the various circles. It will emerge as an essential tool for the effective running of the therapeutic networks.

3 The creation of day hospitals to furnish doctors and, more generally, all health workers responsible for the medicosocial treatment of AIDS, with a means of circulating scientific information. As an alternative structure to conventional hospitalisation, day hospitals should relieve the existing overburdened hospital facilities.

The aims of day hospitals should be:
- early detection of opportunistic infections
- accommodation of patients receiving health visits
- collection of the necessary data for a better understanding of the natural history of HIV-1 and HIV-2 infection
- running of a pharmacy which would cover AIDS specific treatments

Apart from the link which such a structure represents between general medicine and hospital medicine, day hospitals should facilitate access to health care both from a practical point of view and from a psychological point of view. Their working hours must also be sufficiently long to enable visits by economically active patients.

Day hospitals would facilitate the acceptance by the general population of an illness which still triggers discriminatory reactions.

Whilst providing a medical service, they must also have facilities to care for close friends and relatives and to disseminate information regarding health education and AIDS prevention.

These centres would aim at promoting the establishment of concerted policies:
- at a preventive level, for the screening of HIV and for the establishment of treatment programmes for opportunistic diseases
- at a psychological level, for the care of seropositive individuals and AIDS sufferers

APPENDIX

The English Speaking Roundtable

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Professor George Teeling Smith	*Director* Office of Health Economics, London
PARTICIPANTS	
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Dr Evaristo Marowa	*Coordinator* National AIDS Control Programme, Ministry of Health Harare, Zimbabwe
Dr Warren Naamara	*Director* National AIDS Control Programme, Ministry of Health Entebbe, Uganda
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The French Speaking Roundtable

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