

Paper for Maputo Conference - ANC Department of Health.

## **Strategies for the control of AIDS in the African National Congress**

AIDS and HIV infection are a global problem and are endemic in much of Central, East and Southern Africa. In some areas 15% or more of active reproductive young men and women are infected with HIV (Quinn et. al. 1986, Namara et. al 1987, Piot et. al. 1987) Approximately one half of children born to HIV-infected mothers will acquire HIV infection, therefore in the most severely affected areas a substantial proportion of the next generation will be infected from birth. Currently, it appears probable that most HIV-infected persons will eventually develop AIDS.

In Africa, this epidemic is a heterosexual epidemic.

### **What are the transmission dynamics of STDs and AIDS ?**

For any communicable disease to continue to exist or spread in a population, one infected individual must on average infect more than one susceptible individual. In the mathematics of epidemic theory the basic reproductive rate of the disease must be greater than 1 for continued endemicity or an epidemic to occur. For diseases transmitted by sexual acts, since most members of a population are monogamous over short periods of time, this requirement is achieved through some members of the population having sex with multiple partners. These high frequency transmitters are at highest risk of acquiring and transmitting a sexually-transmitted disease (STD) thus, they are, in essence, a dynamic reservoir of all STDs. Given the central role of these high frequency transmitter groups in the epidemiology of STDs, these groups should also have a major role in efforts to control STDs.

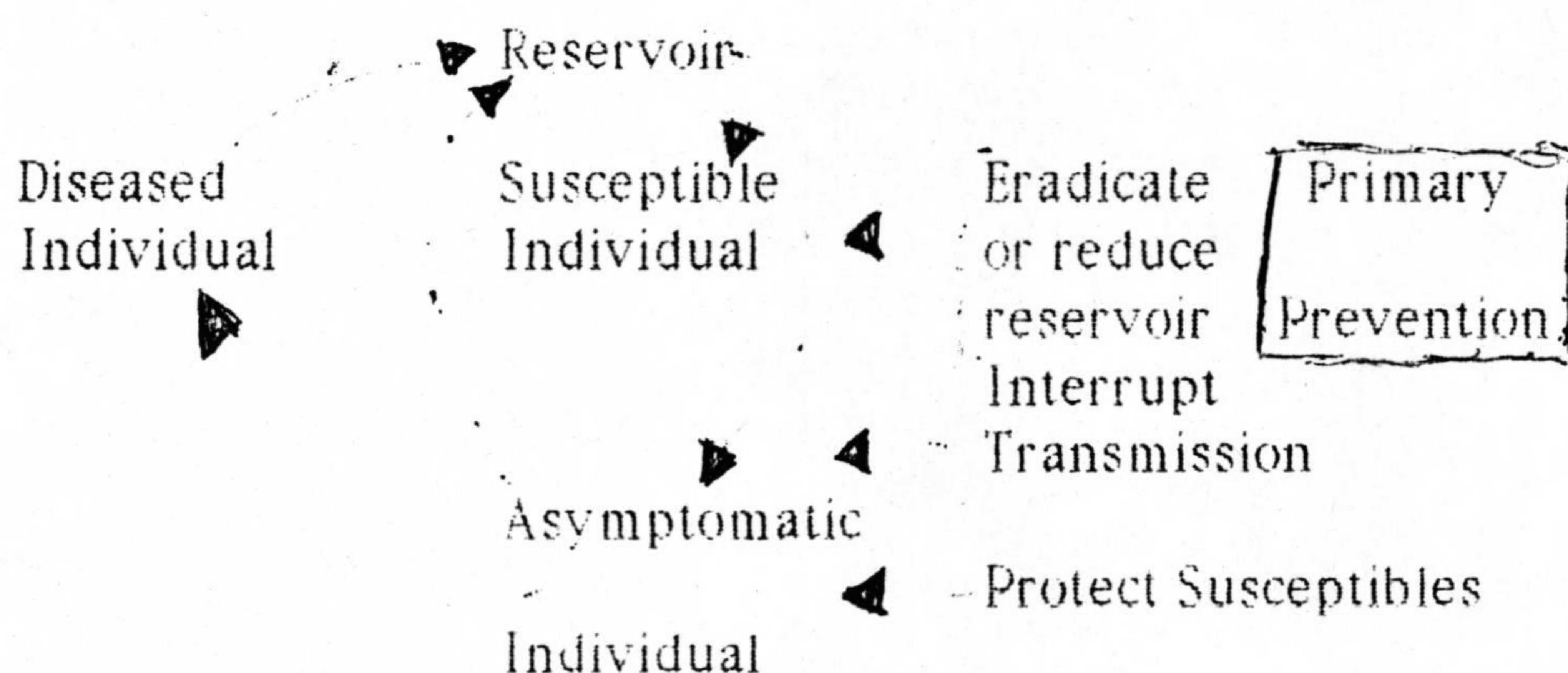
Examples of high-frequency transmitters:

- Prostitutes
- Soldiers
- Police
- Truck drivers (long-distance)
- STD clinic patients
- Young people - students
- Barmaids
- Conferees

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This paper would like to use Francis Plummer and Elizabeth Ngugi's paper in exploring strategies for the control of AIDS.

### General strategies for control of infection



<u>Treat disease and complications</u>	<u>Identify and treat asymptomatic infections</u>
Tertiary prevention	Secondary prevention

*Figure 1*

### General Strategies for control of infection

A general model of transmission and intervention points for infectious diseases is shown in Figure 1. Three general approaches to control are theoretically possible: the prevention of infection (primary prevention); the detection of infection prior to the development of disease (secondary prevention); and the treatment of disease and complications once developed (tertiary prevention) (Curran, 1984).

Available therapy for AIDS and HIV infection are not curative and, thus, control through secondary or tertiary prevention is not possible at present. A corollary to this is that treatment of AIDS with azidothymidine in itself is unlikely to have an important effect on the control of HIV. It seems unlikely that a curative therapy will be available in the near future. Barring the discovery of a simple, short-course, inexpensive therapy for HIV, therapy for AIDS or HIV infection will most probably have a very limited impact in Africa.

The ideal form of primary prevention (the simplest, most effective, least expensive) would be a vaccine to provide

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specific protection against infection. However, it is far from certain that a vaccine will be developed and, if possible, when it will be available. We cannot wait while hundreds of thousands of new HIV infections occur before acting to prevent the spread of HIV.

Other strategies for primary prevention can best be understood from examining the model of HIV transmission presented in Figure 2 ~~(the <sup>2666</sup> ~~model is under review~~)~~ HIV is predominately a sexually transmitted disease. The overwhelming majority of HIV infections in adults in Africa are acquired through sexual intercourse with an infected heterosexual partner (Piot et. al 1987b) Although blood transfusions are clearly responsible for a proportion of HIV infection and other parenteral exposures such as injections may play a smaller role, control of these routes of infection would have a small effect on the epidemic. Sexual transmission is also the route of transmission which establishes and enlarges the reservoir of HIV virus for perinatal and parenteral transmission. If we are to control this infection with currently available tools, control of the heterosexual spread must be the first goal.

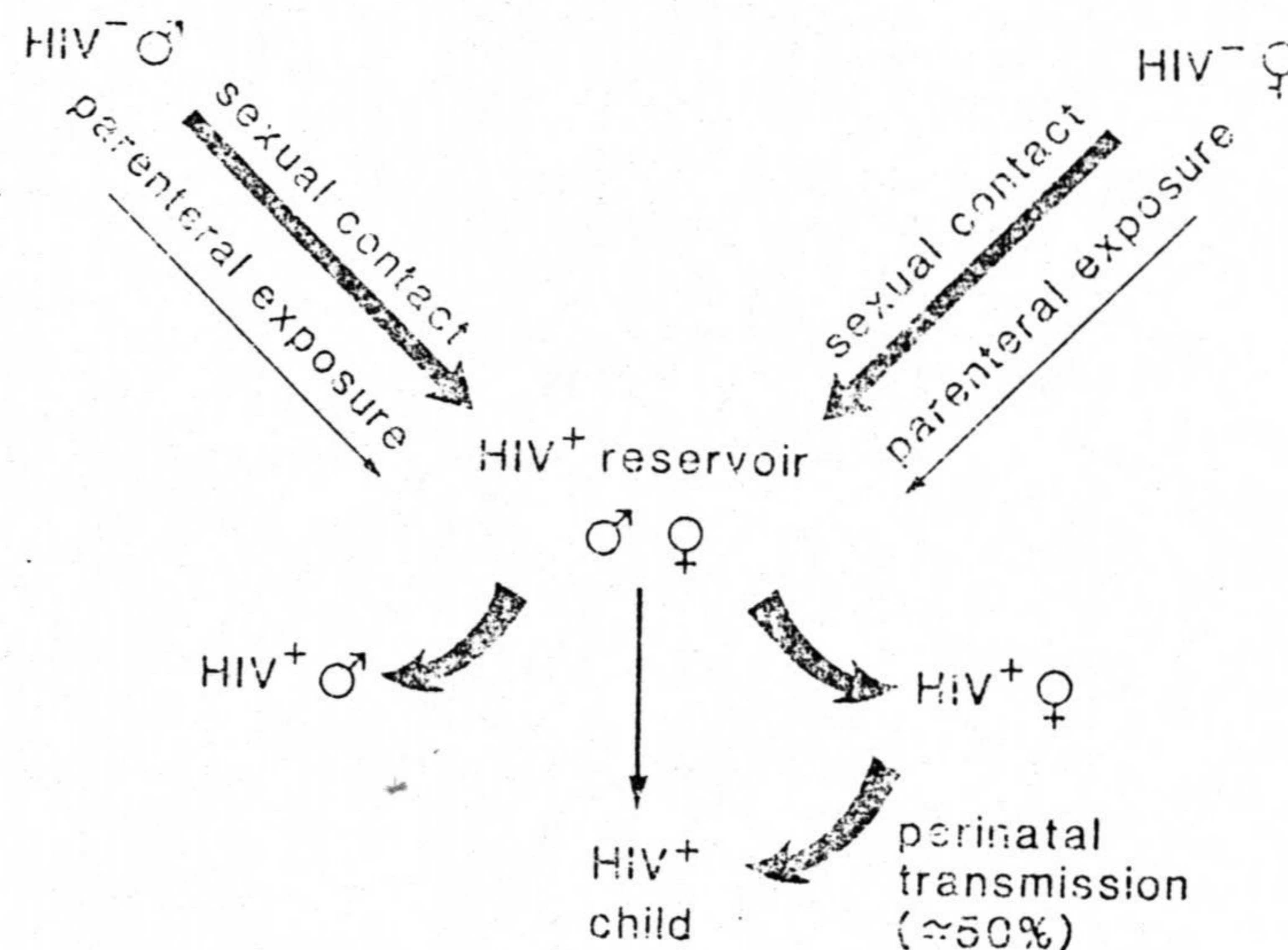


Figure 2. A model of HIV transmission in Africa.

## Primary prevention of sexual transmission of HIV

Logically, there are several intervention points which may be used for interrupting sexual transmission of HIV. These are: decreasing or eradicating the reservoir, reducing the

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frequency of exposure of susceptibles and decreasing the likelihood of infection of exposed susceptibles.

The reservoir of HIV infection consists of HIV-infected men and women who are sexually active. Men and women engaged in the purchase and sale of sex (prostitutes and their clients) are one component of the reservoir in many African urban areas. Men and women who acquire sexually-transmitted diseases (York et. al. 1978; D'Costa et. al. 1985) are another, overlapping component. As with other sexually transmitted diseases, these men and women are responsible for dissemination of HIV to less sexually-active segments of the population. These groups are often readily identifiable. (It should be noted that these men and women are victims of the disease.)

Reducing the size of the reservoir can be attempted in many ways. In addressing the cycle of prostitution, the best and most permanent solution would be to reduce the supply of prostitutes by providing other economic alternatives for women and to alter the demand for sex among men through reunification of families and health education. These are long-term solutions which we must work towards, but are of limited immediate benefit. Legal proscription of prostitution has been attempted universally and is almost universally a failure. Stricter enforcement of existing laws or new, harsher laws is certain to drive the cycle further underground making other control efforts more difficult or impossible. Education about HIV and other diseases aimed at altering behaviour (cessation of prostitution, use of condoms) is the most feasible alternative.

Men and women attend STD clinics which are crowded and with long waiting periods. This situation presents an unparalleled opportunity to reach large groups of HIV-infected and HIV-at-risk individuals very efficiently. Posters, lecture demonstrations, continuously-running audiovisual programmes and individual counselling for selected individuals such as repeatedly infected persons are all potential tools for modifying sexual behaviour. Education about and distribution of condoms can also be incorporated into such programmes.

HIV testing could be incorporated in each of the approaches described above. However, this would enormously increase the complexity and expense of the programmes. The added

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benefit is uncertain because a behavioural change is sought in both those infected and those uninfected. The effect of HIV status on subsequent sexual behaviour is also uncertain.

### **Strategies for reducing exposure of susceptibles.**

As HIV infection becomes more widespread, individual members of the reservoir will become less distinguishable. This is already true in some African settings. For this reason, strategies aimed at the general population also form part of the control of reservoirs.

Control activities cannot solely be directed at effecting behavioural change in the highest risk populations, but must also be directed at all sexually active individuals and presexual adolescents. Although no data related to sexual behaviour are available, it seems likely that effecting a permanent behavioural change is more difficult than preventing the development of a behaviour. Perhaps relatively greater efforts should be put into programmes directed at presexual adolescents. Such programmes on HIV and other STDs should be presented in schools with sex education, contraceptive education and health education. This type of curriculum will often be extremely sensitive and meet with resistance. However, this must not impede implementation. Educating those who react negatively to these programmes is part of the task of HIV control.

Every opportunity to educate should be taken. HIV education should be incorporated into appropriate existing health education programmes such as family planning and maternal/child health programmes and workplace health education. Separate HIV education programmes utilising mass means (posters, newspapers, radio, television) are very effective means of reaching large numbers of people. Innovative approaches such as mobile educational teams with audiovisual equipment can be developed to reach remote areas or other special populations. In these programmes, the messages should include current factual information about the infection and disease, routes of transmission, and risks of indiscriminate sex.

### **Reducing the risk of HIV acquisition in exposed susceptibles.**

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No control programme based on modification of sexual behaviour will approach full prevention. Everlasting mutual monogamy of entire populations is not achievable. Once established in a population, HIV will continue to spread despite control programmes, albeit at a much lower rate. Even with a few sexual partners, the risk of HIV is substantial with the levels of prevalence being reported from several African cities (Piot et. al. 1987b) additional strategies to reduce the risk of transmission must therefore complement behavioural programmes. Several potentially effective strategies can be devised based on an emerging understanding of heterosexual transmission.

The best method currently available is the use of the condom by the male partner. Education is the first step in promoting condom use. The level of education can be very simple and need not involve efforts directed at individuals, such as one-to-one counselling. The second and probably most important is making condoms freely available.

Experience in Nairobi with prostitutes showed relatively little change in patterns of condom use as a result of education, but once condoms were made freely available, use of condoms increased rapidly (Ngugi et. al. 1987) Both an increased insistence on condoms by prostitutes and an increased demand for condoms by their clients are responsible for this marked change.

Other sexually transmitted diseases seem to play a key role in facilitating the transmission of HIV. In a study of prostitutes, it was found that women who experienced genital ulcer disease and women who acquired cervical chlamydia trachomatis infection were more likely to acquire HIV infection (Piot et. al. 1987b; Plummer et. al. 1987) These infections may act to increase susceptibility of the female genital tract to HIV, either by producing breaks in the integrity of the epithelium or by increasing the number of HIV-susceptible target cells (activated T4 lymphocytes) in the genital tract.

Studies of female-male transmission suggest that, among men with sexual exposure to an infected prostitute, men who acquire genital ulcers are three to five times more likely to acquire HIV infection than men who acquire gonococcal or non-gonococcal urethritis (Cameron et. al. 1987). These data

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probably indicate that increased shedding of HIV occurs in women with genital ulceration.

Given the likely role of increasing susceptibility of women to HIV and increasing the infectivity of HIV-infected women, control of conventional STDs may be an additional strategy for reducing transmission of HIV. For instance, control of chancroid and syphilis in a prostitute population could substantially reduce both the risk of acquisition of HIV among the prostitutes and decrease transmission of HIV by infected prostitutes. Although the efficacy of such a programme has not been tested, it seems a reasonable assumption that this would have an important salutary effect on reducing transmission of HIV.

Control of chancroid and syphilis can be achieved through case detection and treatment combined with health education and promotion of condom use. Both diseases can be readily diagnosed clinically (Nsanze et. al. 1981; Plummer et.al. 1985) or, with simple serological tests, can be cured with single dose antimicrobial therapy (Plummer and Ronald 1985) and are highly associated with prostitutes and their clients (Plummer et. al 1983; Blackmore et. al. 1985). Innovative approaches to implementation of such control programmes will be necessary. Again, organisation of prostitutes along primary health care lines with community health workers and participation in the the project by prostitutes is one successful model (Ngugi et. al. 1987).

### **Control of perinatal transmission**

The relative importance of perinatal transmission to the HIV epidemic in epidemiological and public health terms is relatively smaller than heterosexual transmission. Currently available evidence suggests that most HIV-infected children will develop AIDS and die at an early age (Rogers, 1985). Thus most newborns with HIV infection will not survive for a sufficient time to become part of the reservoir for transmission. Although the death of a child is a great tragedy, the importance to the further spread of the epidemic, as well as the impact on society and the economy, is small when compared to the death of an adult.

The major tool in reducing perinatal infection must be reducing HIV infection in women through control of heterosexual transmission. In addition known HIV-infected

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women should be counselled about the risks to the newborn, to avoid pregnancy and the use of contraceptives. If sufficient resources are available, screening programmes in family planning clinics and antenatal clinics to detect asymptomatic HIV-infected women combined with counselling could be attempted. Where termination of pregnancy is an option, screening programmes to detect pregnant women with HIV infection is an additional potential strategy.

Although the relative importance of HIV transmission through breastfeeding is unknown, it seems clear that some transmission occurs via this route (Zigler et al. 1985). In Africa, it is not feasible to advise HIV-infected mothers against breast-feeding. There are simply no safe, inexpensive alternatives for infant nutrition. However, in areas of high HIV-prevalence, practices such as sharing of breast milk and wet-nursing should be discouraged. In hospitals, breast milk pools should be managed like a transfusion/blood products service with screening of donors and heat treatment of pooled breast milk (although studies are not available) a protocol similar to that used in preparing factor VIII concentrate would perhaps be adequate).

In Africa, intravenous drug abuse is not a widespread problem. However, the reuse of inadequately sterilised needles and other equipment in medical settings and by "street doctors" or traditional healers is widespread and undoubtedly contributes to the spread of HIV. The size of this contribution is uncertain. In formal medical care settings, switching to oral therapy and provision of disposable injection equipment is a simple but costly solution. Re-education of health workers and provision of adequate facilities for sterilization is the most practical strategy for most of Africa. Tackling the problem of the use of inadequately sterilised needles by unlicensed practitioners will be more difficult. Because they are often illegal, approach in order to educate them may be extremely difficult. Perhaps the most effective strategy would be to educate their customers about the risk of this type of injection.

On the surface, prevention of transmission of HIV by blood transfusion seems straightforward. Strict medical indications for blood transfusions must be observed. Combined with

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donor deferral ( perhaps based on a history of STDs or number of sexual partners), screening of donated blood should be simultaneously implemented. However, inadequate or non-existent transfusion services, lack of trained personnel or equipment, logistical problems and financial constraints complicate these programmes. Considerable support for ongoing management will be necessary. A large input of external resources will be required before the blood supply is safe.

The African National Congress cannot escape the epidemic since its exile communities are in the countries with established epidemics (Hopefully not for long). South Africa is just at the start of the epidemic so it is critical and urgent that a national campaign should take root now if we are to avoid a catastrophic epidemic ~~of the sort~~ <sup>that</sup> other African countries are experiencing and whose magnitude is only beginning to be understood.

Some people could argue that it is not necessary for the ANC to spend resources on an AIDS campaign because the host countries have national intervention programmes from which we should benefit. However there are very compelling reasons why the ANC has to make a start on AIDS control.

The ANC communities are unique in a number of ways. There are language and cultural differences between ANC people and host countries which limit the benefit from local education and intervention strategies. ANC people are highly mobile depending on deployment and even most families are unable to live together. This then poses a problem about the one partner strategy. The communities are also very close-knit and there is a great deal of mixing in terms of relationships which create a potential for high rates of transmission even though the reservoir may be small.

The ANC therefore has a duty to develop a strong campaign for the control of AIDS. There is also the aspect of providing support and counselling for those who are HIV-positive or ill from AIDS without ostracising, stigmatizing, intimidating and discriminating against the victims.

When parents become ill, there will have to be some provision for the children emotionally and materially. The ANC Department of Health has an ongoing programme to strengthen primary health care activities and to increase the

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ANC community's understanding of the prevention of STDs including HIV/AIDS. The programme is divided into two components:

- Education and information
- Strengthening of laboratory resources

This programme is spread through all the regions that ~~house~~ have ANC communities. Since May of last year, many workshops have taken place at both national and regional levels. Health education is also being given to community members through talks, videos, posters and leaflets.

The AIDS campaign has to be undertaken not only by the Health Department, but by a multidisciplinary team if it is to succeed. The ANC needs to incorporate an AIDS campaign in its national mobilization programme inside and outside South Africa. As a liberation movement it has the credibility which is crucial in any intervention programme in South Africa if it is to be accepted by the people. Unfortunately, the South African regime has used AIDS for its own propaganda and people are not going to take any other campaign seriously unless the ANC is involved.

Some aspects of the struggle can be used as entry points e.g. the migrant labour system. An AIDS campaign among migrant workers would have to be linked with the struggle of those workers for the right to live with their families, their consequent right to proper housing, etc. It can also be used in relation to the demand for rural development, so that men can find employment near their homes and families.

The Trade Union movement and some other individuals have started on an AIDS campaign, but this needs to be expanded nationally, while at the same time focussing on high-frequency transmitters such as prostitutes, the army, etc. It is also important to get into the schools, as previously noted, in order to reach the younger generations before they establish certain behaviour patterns.

Once a large number of people are ill, their care both in hospital and in the community becomes very expensive, and action at this stage is one strategy for keeping their numbers low. We need to develop health policies and a national health system in order to provide health for all - but this may not be possible if faced with a huge AIDS epidemic.

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AIDS will affect mainly the economically active population and a serious epidemic will have grave economic consequences. Many children will be born HIV-positive if large numbers of women are positive. In addition, large numbers of children will be orphaned, resulting in serious social problems for the state, the community and the children themselves.

In countries like Uganda and Tanzania there are tens of thousands of orphaned children as a result of AIDS, and governments are finding it impossible to cope. We are fortunate in that the epidemic is reaching Southern Africa last, so that we are able to learn from the experiences of these other countries.

### **Conclusion**

The magnitude of the epidemic in Africa is only now beginning to be understood. South Africa, particularly the ANC, has to take a lead in the campaign in order to prevent a catastrophic HIV epidemic. While research is racing against time in an effort to develop a cure or vaccine, it is clear that both these are still ~~light~~ years away. Control of HIV infection is still primarily through education, change in sexual behaviour, promotion of condom use and distribution of condoms, and control of other STDs.

It is up to all of us to make an effort to minimise the effects of the epidemic by being part of the campaign.