

HIV control in low-income countries in sub-Saharan Africa: are the right things done?

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HIV control efforts in sub-Saharan Africa meet with difficulties. Incidence and prevalence remains high, and little behaviour change seems to have taken place. The focus on HIV control has shifted to anti-retroviral therapy (ART), although this is unlikely either to be cost-effective or to reduce the incidence of HIV. There is reason to change the current approach. Three questions arise: Is there a need to adjust the view on the determinants of the HIV epidemic in sub-Saharan Africa? Are the right things being done to control HIV? Are the things that are being done, done in the right way? We try to answer these questions. The determinants of the epidemic are reviewed and summarized in Figure 2. The need to adjust the view on the determinants and get rid of myths is stressed. A possible, locally adaptable intervention mix is outlined. Male circumcision is a key intervention where socially acceptable. Operationalisation and organisational changes are briefly discussed. Conclusively, the need for a “social revolution” through the opening up of a discussion on sexuality in the community, as well as a focus on cost-effective interventions and a slimmed down, more effective organisation is underlined. Such steps might make it possible to considerably reduce HIV-incidence, even in low-income countries.

Keywords: *HIV; AIDS; prevention; determinants; stigma; “social revolution”; operationalisation*

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Introduction

Efforts to control HIV in sub-Saharan Africa meet with considerable difficulties. Although the epidemic seems to be levelling off (1), both incidence and prevalence are still high in many parts of the continent. In spite of 20 years of HIV control activities, little or no behavioural change has, with a few exceptions, such as Uganda and Zimbabwe (2, 3), been reported. The reasons for this could be that the underlying determinants have not been properly addressed or that changing sexual behavioural patterns and traditions is difficult and demands long-term interventions to succeed, as shown by the experience gained from attempts at reducing female genital mutilation (4). Moreover, African leaders and even researchers, who are best placed to tackle the problem, have shied away from the subject.

Perhaps due to the difficulties in achieving behaviour change, the focus on HIV control has shifted to ART therapy. But this approach is both very costly and demanding on human resources, and not likely to greatly

affect the incidence of infection. Although it was hoped that ART treatment and prevention would have synergistic effects, the success gained in life-years (LYs) saved through ART seem not yet to have translated into better effect of prevention efforts (5) in spite of an increase in the number of screened and treated individuals.

Three questions arise: Is there a need to adjust the view on the determinants of the HIV epidemic in sub-Saharan Africa? Are the right things being done to control HIV? Are the things that are being done, done in the right way?

We discuss these questions for sub-Saharan Africa in light of findings mainly from Tanzania, but also from other sub-Saharan countries.

The HIV epidemic in Tanzania

Occurrence of HIV and the effect of ART

The incidence of HIV remains high even in a medium-prevalence country like Tanzania, but also there seems to be a levelling off of between 200,000 and 250,000 newly

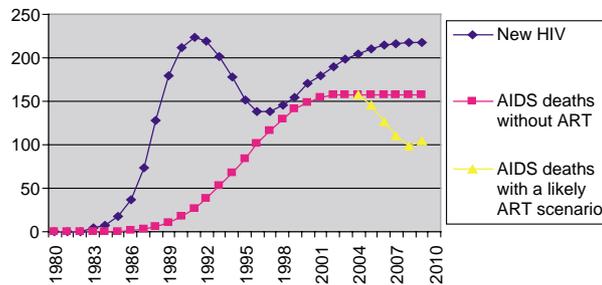


Fig. 1. Projections in 000s made with the use of UNAIDS SPECTRUM model* through entry of data from sentinel surveillance at ante-natal clinics in Tanzania from 1986 to 2006, as well as data from the Tanzanian HIV/AIDS indicator survey of 2003–2004. New HIV infections, AIDS deaths without ART from the start of the epidemic 1980 to 2010; AIDS deaths with a possible scenario based on a projection of current ART implementation efforts. (*UNAIDS (2005) Spectrum model version 2005.)

infected persons per year (Fig. 1) or around 1% of the adult population, if the projection, although based on uncertain data, reflects reality, which at least seems plausible. The course of the epidemic in Tanzania may be explained by an initial peak in transmission in 1990–1992, corresponding to a rapid transmission in urban and so-called high-transmission areas along the main roads, followed by a gradually increased spread into the rural areas. The increase in patients on ART will lead both to a prolonged survival and a decline in the viral load and infectivity of those on treatment. As ART, often in low-income countries, is initiated at a very late stage of the disease (6, 7), when the patients are probably less sexually active, neither the increase in the number of infected nor the decrease in infectivity is likely to have any major impact on incidence, as also concluded from modelling studies (8).

Anti-retroviral therapy (ART) at current resource levels in Tanzania, according to our estimates - based on the availability and productivity of staff and the reported numbers on treatment in Tanzania (9) - seems able to maximally reduce the number of AIDS deaths by around one third; but not more, as most of the limited human resources that can be allocated to ART in competition with other pressing needs, a few years into the programme, will have to be used to retain those already initiated on treatment (10) and therefore will not be able to initiate treatment for many new patients. This will also be the case for other low-income countries with medium or high HIV prevalence. The shortage of resources is further accentuated by the parallel and closely linked tuberculosis epidemic, characterized by tuberculosis experts as “the worst tuberculosis epidemic since the advent of antibiotics” (11). Therefore, an increase in staff devoted to ART seems unlikely in the near future, considering the dire human resource situation in low-income countries in sub-Saharan Africa (12).

Is there a need to adjust the view on the determinants of the HIV epidemic in sub-Saharan Africa?

The determinants of the epidemic

Transmission of sexually transmitted infections is determined by the patterns of sexual contacts. The determinants of the epidemic could therefore be divided into two main groups: *one group*, which determines the density and character of the sexual networks, and *another group*, which determines the probability of HIV transmission per sexual encounter within the networks, including factors that influence the duration of infectivity (13) (Fig. 2).

The sexual networks are determined by the underlying factors (Fig. 2). These include the socio-cultural norms, such as gender imbalances and concurrent partnerships, and the socio-economic factors, such as road communications and single men and women. The importance of religion is demonstrated by the fact that the prevalence in Zanzibar, the strictly Muslim island-part of the union was 0.9% in 2002 (14), while in mainland Tanzania, with a population of mixed religious affiliation, it was 7% in 2003/2004 (15). Further, the Muslim countries in the Southern part of the Sahara have very low HIV prevalences. Although male circumcision confounds these facts, it seems probable there is a link – maybe due to the stricter social rules in Muslim societies. Strong evidence suggests that the probability of transmission within the networks is determined both by biological factors, such as concomitant sexually transmitted infections, mainly ulcers, in particular, herpes genitalis (16, 17), the circumcision status of men (18–20), and by behavioural factors, such as the level of condom use and multiple and concurrent partnerships (21, 22) (Fig. 2), particularly if these embrace the initial phase of infection with high viral loads. The duration of infectivity is mainly influenced by concomitant sexually transmitted infections (STIs) and at the end of the disease period by the ARV therapy given to a portion of the infected. Until recently,

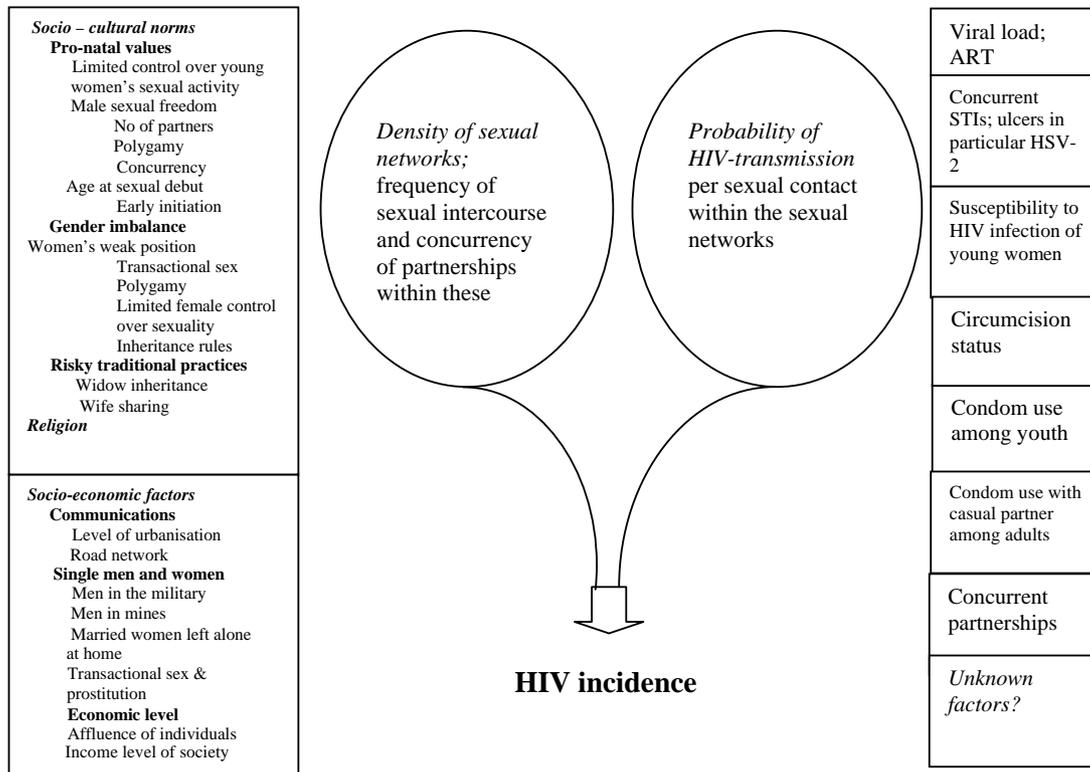


Fig. 2. Hypothetical model for determinants of HIV incidence resulting from sexual transmission in sub-Saharan Africa. The factors to the left of the picture determine the sexual networks, while those to the right of the picture influence the probability of transmission between individuals within the networks.

other factors had not been identified, but their existence had been predicted (23). Such a factor may be the recent discovery that the Duffy antigen receptor for chemokines, which is highly prevalent in Africans, has been found to facilitate HIV transmission (24).

The different combinations of these factors may explain much of the large variation in HIV prevalence in sub-Saharan Africa, including a more than ten-fold difference in prevalence both between the regions of the continent with the highest and lowest prevalence (25) and the large differences between provinces and ethnic groups within countries like Tanzania (15).

Many of the determinants described in Fig. 2 have not yet been addressed or addressed only to a limited extent. Much more needs to be done, but because of severe resource constraints in low-income countries, it is necessary that interventions are carefully selected to tackle the problems and realistic targets set, as planning and doing one thing to scale may mean that other interventions cannot be implemented.

Considering the limited effect of current interventions and the continued high HIV prevalence, particularly in Southern Africa, there are strong reasons to scrutinize both the definitions of the problems, current policies and best practices, and try to narrow the gap between these and the reality of poor villagers and urban dwellers (26).

This demands an adjustment of the view on sexuality in Africa that prevails in the west, where the policies are outlined (27, 28) and an adaptation of these to the complexities of the reality of sexual activities in sub-Saharan Africa (29).

Getting rid of “myths”

In addressing the epidemic, certain “myths” about the disease have been created. As part of the adjustment, these myths have to be discarded to avoid misdirection of control efforts. They include:

- HIV is a disease of the poor.
- Prostitution is the main source of infection.
- Women are victims.

The disease has long been thought of as a disease of poverty (30). However, at least in East Africa, national representative surveys from Tanzania, Kenya, Uganda, and also from Malawi have clearly shown that HIV prevalence is lowest among men and women in the poorest wealth quintile of the population and highest among women in the highest quintile (Fig. 3) (31–33). Similar studies in four other sub-Saharan countries (Burkina Faso, Cameroon, Ghana, Lesotho) have not shown any clear trends. But here also there is no

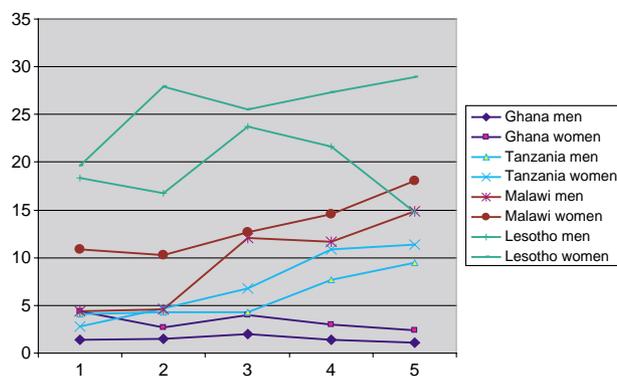


Fig. 3. HIV prevalence (%) in relation to wealth quintile in selected countries in Southern, Eastern and Western Africa according to three demographic health surveys and a national HIV indicator survey (Tanzania).

correlation with poverty. The mechanism here could be that more affluent people are likely to have more sexual choices, as it costs to have sex, and higher rates of partner change, also due to their greater mobility. More of them also live in urban areas, where HIV prevalence is higher (34).

It is also gradually becoming clear that prostitution is not a main factor of disease transmission. Although prostitution probably was of greater importance at the beginning of the epidemic (35) and still continues to influence the epidemic, the much greater importance of transactional sex or “money as an appreciation of sex” is now being recognized (29, 36, 37).

The idea of women as victims was brought forward mainly by UNAIDS (38, 39) and other international agencies. It indirectly portrays African women as both “powerless and passionless.” This, in our experience and in that of African researchers, is both degrading and incorrect (27, 40). This portrayal is now being questioned both by findings from prevention of mother-to-child-transmission (PMTCT) (41) and by a recent study on discordant couples (42). The strong sexual drive of young women and the need of some married women for love and some luxury cannot be denied (27), and are likely to be important driving forces of the epidemic. It also seems clear that the subordinate position of women and the domination of men in many societies are other important forces (Fig.2) (33).

Are the right things being done?

Much effort has been put into addressing the above-mentioned “myths.” There is now a need to reanalyse, refocus and tackle some of the actual important problems that have not yet been addressed.

Reduction of the density of sexual networks

Returning to the determinants of infection (Fig. 2), the analysis of sexual networks is crucial in the understanding of disease transmission for any sexually transmitted disease. Little of such analysis has been

undertaken so far. However, a study from Malawi, with a recall period of three years, has recently shown that two-thirds of an island population belonged to a large and dense sexual network (43). It cannot be excluded that such large and dense sexual networks also exist among other ethnic groups and that this may be one of the main explanations for the high HIV prevalence in parts of sub-Saharan Africa. Moreover, the desire for children is still strong in sub-Saharan Africa and a desired family size of around five children is common. It has been suggested this desire might translate into a more permissive attitude towards sex and concurrent partnerships and a larger risk for sexually transmitted infections (Fig. 2) (44). A recent national survey from South Africa of more than 7000 people (ages 15–65) also showed that social norms encourage both concurrency and multiple sex partners, with little peer support for commitment to a single partner (45).

A number of interventions to reduce the density of sexual networks (Fig. 2) could be considered depending on the local context and must be judged feasibility, locally. Interventions directed at pro-natal values could include the reduction of sexual freedom of males, which, as a first step, could mean increased use of condoms in casual sexual relations at least until the couple has undergone HIV testing (maybe also implying that rapid testing would be made available to individuals). Such increase might be feasible. The maintenance of multiple and concurrent relationships may be related to polygamy as a commonly accepted norm and might take time to address. The reduction of gender imbalance is a long-term objective of government policies in most countries, but implementation has not yet led to much concrete results, regarding HIV maybe at least partly because they build on an incorrect problem description (27). The control and protection of teenage girls and women, including the reduction of transactional sex, might also be difficult to effectuate, as demonstrated by the high numbers of women who are first infected in discordant couples (42). Still, in each context it has to be judged

what interventions are feasible. It should be possible, in most settings, to address the problems related to single men and women and limit separation of married women from their men, who work in mines and in the military to a larger extent than now. Maybe the most feasible social norm change might be abolition of certain traditional practices, such as sexual cleansing of widows and early initiation of girls and wife sharing. These practices might not be important for the epidemic at the population level, but could serve as symbols of the break up of traditions and might, if successfully implemented, show that change is possible – an initiator of a more profound and complicated change process, which would eventually lead to permanent changes in gender relationships, traditional practices and sexual behaviour. Efforts to address these are also made (46). However, attaining these permanent changes, by necessity, means making hard decisions, major changes and sacrifices.

Reduction of the probability of HIV transmission

The probability of transmission per sexual contact (Fig. 2) is determined both by bio-medical and behavioural determinants. Transmission is influenced by the length of the relationship and the frequency of sex within the relationship (47, 48). Among the interventions, the control of other sexually transmitted diseases has been shown to have low community effectiveness, i.e. control efforts have so far only led to the cure of a small portion of the STIs in the community (49), and specific treatment of herpes genitalis, the main cause of genital ulcers, has only recently been added to the treatment algorithms, and studies of acyclovir treatment for herpes virus type 2 have failed to demonstrate additional protection against HIV infection (50, 51). Recently, a vaccine against genital herpes has been developed, but it is still at the trial stage (52). It is also likely that anti-retroviral treatment of AIDS patients, because of the weakness of the health system in low-income countries, including the shortage of staff, will only reach a portion of those in need and that those infected may only be maintained on treatment for a limited time (53). Condom use in married couples seems unrealistic and probably remains limited in casual relationships, particularly after the initial sexual encounters. It needs to be increased among youth and attempts should be made to transform it to a social norm for all age groups – until the sexual partners have undergone testing. Male circumcision, for many years commonly performed in many urban areas (54) and in ethnic groups that traditionally do not circumcise, has only recently been recommended (19), after clear research evidence has been presented (18, 55). It is still of limited scale, but is likely to increase substantially, where it does not run into political problems. African experts have also recently agreed on strategic orientations for scale-up of male circumcision (56).

Is the balance between prevention and care right?

It is also clear from what has been described above that the renewed focus of interventions has to be on *prevention* and thereby reduction of new infections. This is also in line with much of current thinking (57). The current focus on ARV treatment has to be reviewed as a reasonable coverage might be difficult to sustain in low-resource countries since more and more resources have to be devoted to those already on treatment, particularly in successful programmes with low patient losses. A high coverage can therefore only be achieved if the incidence is substantially reduced. As De Cock stated at the 16th World AIDS Conference 2006 “We cannot treat ourselves out of the epidemic” (58).

As interventions, so far only to a very limited extent, have explicitly covered the underlying social and cultural factors, maybe the main determinants of the epidemic, the information that has been given has often not been fully relevant for the community members. It has largely been general in character and mostly the same information has been given to the whole population through mass media without much adaptation to local settings. Initially, it focused on creating awareness and causing behaviour change by fear through the “beware of AIDS” and “AIDS kills” campaigns, later it offered advice on sexual behaviour through the ABC (abstinence, be faithful and use condom) approach (59). It is our opinion that the epidemic, to a large extent, is about sexual drive. Giving negative information on sex is not likely to succeed. Analysis of single ethnic groups has rarely been made. Customized information to ethnic groups based on sexual behaviour patterns and local determinants of transmission has rarely been given, at least not on a large scale. Villagers have therefore never reached beyond the knowledge level of common taxonomies of learning (60) and, therefore, in the main neither applied, discussed/analysed nor synthesized their behaviour. The communication of relevant information to the villagers must be an important prevention task.

Are the things that are being done, done in the right way?

There is a need to reconsider the approach to planning and a need for country-specific plans that consider the resource limitations at both national and local level. Current control efforts are based on plans that are mainly outlined on the basis of internationally formulated templates and targets (61) instead of locally defined problems. These plans tend to be comprehensive, as one of the main objectives is to assure sufficient funding often without taking the known shortage of human resources and the overall limited capacity to implement ambitious plans into consideration (13). In many countries, HIV/AIDS control receives as much money as the rest of the public health system (62). They have therefore, in

practice, lacked prioritisation and evidence-based focus on locally important determinants. However, in the latest UNAIDS Report on the Global AIDS Epidemic, the need to tailor “the response to national and local needs” is clearly recognized (63).

Control efforts have so far paid little attention to operational problems in low-resource settings. The UN agencies and the World Bank have long introduced a multi-sectoral approach with involvement of all sectors of society. Outlined plans build on these international policies, although initially it is likely, in resource-limited settings, to be more effective to limit plans to a few key sectors. Many sectors have little idea of what they should do to control HIV. The approach means a high demand for co-ordination capacity and would if it was scale-up not be operationally feasible (13). If control efforts are now to be focused on what drives the epidemic, as has been suggested by the UNs Special Session on AIDS (64), including the key determinants shown in Fig. 2, a comprehensive multi-sectoral approach may no longer be appropriate in low-income countries. It is likely an initial focus on the key sectors of health, education, defense and local government would be more feasible and effective, as it is through these sectors that key determinants can be addressed and new infections prevented, as also recognized in a World Bank evaluation report (65).

Further, control efforts have so far involved the community only to a limited extent and the political and religious leadership have not managed to break the stigma that still surrounds the disease. The importance of breaking the stigma and of allowing and encouraging an open discussion has been stressed by international leaders (Annan 2002). Attempts at involving the community are currently being made, mainly through the World Bank supported Multisectoral AIDS Project (MAP), which is implemented in some 15 countries in SSA, but the shortage of experience in HIV prevention of NGOs that are the main implementers of the projects has put the quality of efforts expended in these programmes into question (65). Little efforts have been directed at the change of social norms, but UNDP has started activities to address these issues through the “Community Capacity Enhancement Initiative” (66) with the use of UN volunteers (UNVs). Similar to the MAP, one would question the wisdom of trusting such a demanding task to UNVs, in particular since changes of social norms might be key interventions in controlling the epidemic. Although this means altering of age-old habits and implies discussing matters, which have always been part of regular life, it is difficult to see how “a social revolution” (67) could be avoided in face of the seriousness of the epidemic.

The use of scarce human resources

Current efforts thus do little to reduce incidence, and therefore, to a large extent, constitute “side tracks,” which because they are well financed attract a large portion of the qualified staff away from prevention of new infections. Those who think that this is not the case, arguing that we are dealing with two different constituencies (68), we think, have got it wrong. We think we are dealing with “communicating vessels”. In a situation of great scarcity of qualified staff, a qualification does not mainly mean a specific skill, but a capacity and a way of thinking, which can be applied to several fields of expertise. Many staff who are valuable as care givers are also valuable for prevention. They are also likely to rapidly shift to prevention work once the money is there.

Conclusion

There is a strong need to rethink the current HIV control strategies and their operationalisation, including the right resource allocation mix for care and prevention. The architecture of current control efforts is the result of a complex process skillfully managed mainly by UNAIDS, dominated by issues of universal human rights and what has been feasible in international politics. But it has resulted in a situation with many donors and global initiatives, characterized by irrational use of resources and a relative over-financing of ART (69). Still, although costly – saving one year of an AIDS patients life costs around 100 times the government’s per capita expenditure on health – ART has a place in prolonging the life of individuals, contributing to an opening up of discussion on sexual matters and a reduction of the stigma that seems to block effective control activities in most of sub-Saharan Africa. The challenge is now to convince politicians to keep up both the national and international funding, and to target allocations both more rationally for HIV control and to the rest of the sector with a wider health perspective in mind.

Conclusively, the gap between policies and reality needs to be narrowed, the idea of HIV in Africa adjusted, and the content of interventions altered so that the few prevention intervention that are known to be effective, are prioritised. The mode of addressing the problem needs to be revisited; implementation and the size of the organisation need to be adapted to the locally selected interventions and to the operational capacity. More has to be asked from the Africans themselves. Stigma has to be reduced through courageous political and religious leadership, the taboo of openly discussing the “sexual relations” character of the problem has to be broken, the community must be more involved and encouraged to find its own solutions to its own problems. Male circumcision has been shown to be highly cost-effective and should be made a major component of control

efforts. Additional prevention interventions have to be identified locally and scaled-up, while others, less effective, have to be limited to what the system has the capacity to implement. Such a prioritised approach could lead to a major reduction of HIV incidence even in low-income countries.

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