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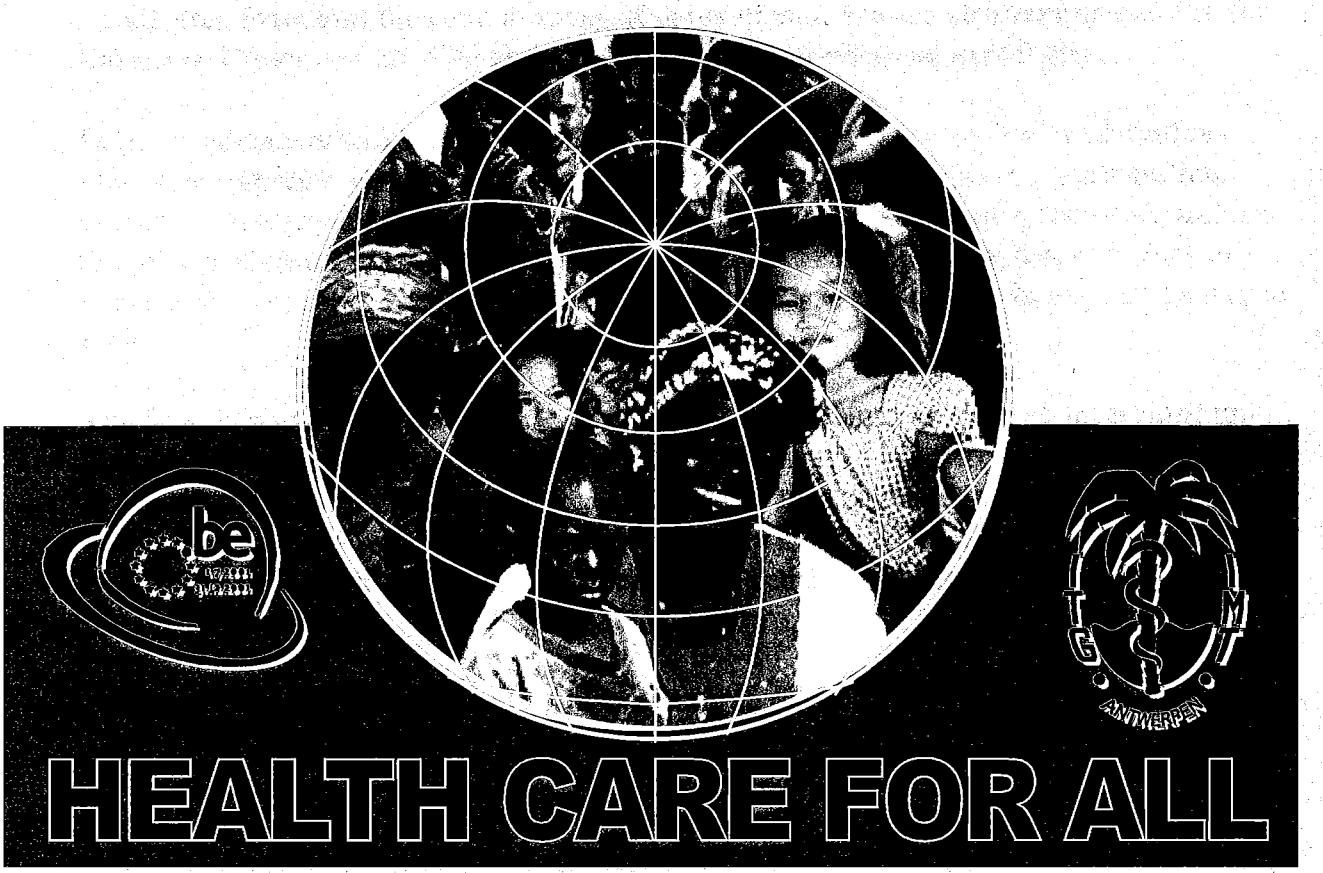

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Stronger health systems for more effective HIV/AIDS prevention and care†

Anne Buvé[1]*, Sam Kalibala[2] and James McIntyre[3]
[1]*Institute of Tropical Medicine, Antwerp, Belgium*
[2]*The Population Council, Nairobi, Kenya*
[3]*Perinatal HIV Research Unit, University of the Wltwatersrand, Johannesburg, South Africa*

SUMMARY

Of the 42 million living with HIV/AIDS world-wide some 90% live in developing countries. The international community acknowledges the devastating impact of HIV/AIDS on development and over the past few years resources to control HIV/AIDS have increased considerably. We argue that strengthening of health systems is a necessary prerequisite for improving the prevention of HIV infection and the care of HIV-infected persons. Sexual behaviour change requires a multidisciplinary approach, but health services play a crucial role in detection and treatment of other sexually transmitted infections; HIV counselling and testing; prevention of mother-to-child transmission of HIV; and care of HIV-infected patients. Increasing access to antiretroviral treatment especially poses formidable challenges to health authorities in developing countries. Additional resources for the prevention of HIV-infection and the care of HIV-infected persons may not have the desired impact if health systems in developing countries are not strengthened. Further, any activity in the area of HIV/AIDS prevention and care, carried out within health services, can have a positive ripple effect on other health care activities and vice versa. This interactive effect needs to be acknowledged and built on.

KEY WORDS: HIV/AIDS; health systems; developing countries; antiretroviral treatment

INTRODUCTION

By the end of the year 2002 an estimated 42 million people world wide were living with HIV. Some 90% of these people were living in developing countries. Especially sub-Saharan Africa takes the brunt of the HIV pandemic: 70% of all HIV-infected people in the world were living in sub-Saharan Africa, which is home to less than 10% of the world's population (UNAIDS and World Health Organization, 2002). The worst affected regions in the world are in Eastern and Southern Africa. In large cities in these regions the prevalence of HIV infection in adults can reach up to 40% (UNAIDS, 2000). In general the HIV epidemics in Asia are less severe, but in

* Correspondence to: Dr A. Buvé, Institute of Tropical Medicine, Nationalestraat 155, B-2000 Antwerp, Belgium. E-mail: abuve@itg.be
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several countries HIV infection is a major public health problem that is likely to increase in importance in the years to come.

The HIV/AIDS epidemics in Africa started in the 1980s and came at a time of economic decline and cut backs in public spending for social services, including health. Further to this, in some of these countries governance tended to be poor and there was a lack of public accountability which led to inefficient use of the meagre resources. There is no doubt that the HIV epidemics have a further devastating impact on socio-economic development in the worst affected countries (UNAIDS, 2000). Life expectancy has decreased and gains in infant health made over the past 20 years have been lost due to mortality from HIV/AIDS. Productivity in agriculture, industry and services has dropped or is dropping, and investments in training are lost. For instance, in Zambia the training of new teachers cannot keep up with the losses due to HIV/AIDS. Numbers of orphans are increasing and exceed the capacities of communities to cope with them.

At the United Nations Millenium Summit in September 2000 decreasing the burden of HIV/AIDS, malaria and other diseases was included in the list of Millenium Development Goals (United Nations Development Programme, 2003). A year later the United Nations convened a special session on HIV/AIDS. It was acknowledged that HIV/AIDS is a development crisis (United Nations, 2001). Under the leadership of the United Nations Secretary-General the Global Fund to Fight AIDS, Tuberculosis and Malaria was created. At first this fund was meant to mobilize resources to fight HIV/AIDS, but later it was extended to include the fight against tuberculosis and malaria. While we are aware and strongly believe that HIV/AIDS is not just a health problem but a major social problem which should be handled using a multisectoral approach we wish to highlight the importance of the health system in both HIV prevention and care. In this paper we will examine whether and how weak health systems hamper HIV/AIDS control programmes. We argue that strengthening of health systems is a necessary prerequisite for improving prevention of HIV infection and care of HIV-infected persons. We will try to answer two questions: (1) Can strengthening of health systems increase the impact of HIV/AIDS programmes? (2) What are the likely effects on health systems of increased efforts in the area of HIV/AIDS prevention and care? These two questions will be examined with regards to prevention of HIV infection and care of HIV-infected people. The two components will be discussed separately although we are aware that they have to go hand in hand.

CAN STRENGTHENING OF HEALTH SYSTEMS INCREASE THE IMPACT OF HIV/AIDS PROGRAMMES?

Prevention of HIV infection

HIV infection is mainly transmitted through sexual intercourse, from mother to child, and through infected blood transfusions and injection needles. We will not discuss prevention of HIV transmission through blood transfusion and prevention of nosocomial transmission, because it is clear that safe blood transfusion and prevention of nosocomial transmission of blood-borne infections ought to be an integral part of quality care in health services.

Prevention of the sexual transmission of HIV. Programmes for the prevention of the sexual transmission of HIV rely on a variety of strategies that aim to reduce the exposure of individuals to HIV-infected sex partners, basically through behaviour change, and to reduce the per sex act transmission probability of HIV. Among interventions to reduce the sexual transmission probability of HIV, control of other sexually transmitted infections (STIs) plays a prominent role.

It is acknowledged that behaviour change requires a multidisciplinary approach and that health services and health professionals play a secondary role in changing community norms and behaviour. This is, for example, illustrated by the remarkable achievements in HIV control in Thailand. A major HIV epidemic was averted in this country by the introduction and enforcement of a programme of 100% condom use in brothels (Nelson *et al.*, 1996). The success of this intervention was only possible because of the political commitment at the highest levels of the country. Sex education for young adolescents is another area where health services play a secondary role. Schools and youth centres may be better placed to reach young people. Consequently a large part of funds for the prevention of HIV infection will need to be allocated to interventions outside health systems.

However, health services do have a role to play in health education and counselling of people with risk behaviour, such as patients presenting with an STI. Health care workers can also play an important role in prevention by offering HIV counselling and testing. And last but not least, health services can and should reach out to meet the reproductive health needs of special vulnerable groups, including female sex workers and adolescents. Extensive experience with the setting up and running of dedicated clinics for sex workers in Kinshasa (Democratic Republic of Congo) and Abidjan (Ivory Coast) has provided evidence that targeted interventions such as information and education, promotion of condom use and care, including management of STIs, can result in a decrease in incidence of HIV infection among the sex workers attending the clinics (Laga *et al.*, 1994; Ghys *et al.*, 2001). In Zambia the Ministry of Health and non-governmental organizations (NGOs) have embarked on an ambitious programme of making primary health services youth friendly. The services provided include information and education, the provision of condoms and family planning methods, and the management of STIs. In many cases these youth friendly services are run by underfunded government health services with some support from NGOs. Notwithstanding resource constraints the programme can be considered successful. The services are very much appreciated by the youth and meet a big demand for information, support and care of adolescents (Vandenhoudt, 2001).

Control of other STIs by case detection and management is entirely within the realm of health services. The community intervention trial in Mwanza region, Tanzania, showed that improvement of detection and treatment of STIs in primary health care services led to a 40% reduction in incidence of HIV infection (Grosskurth *et al.*, 1995). This intervention was implemented through primary health services run by the government, that were most of the time derelict and staffed by health professionals who were underpaid. The intervention team provided the training and ensured regular supply of antibiotics and supervision (Grosskurth *et al.*, 2000). Several lessons can be learned from this experience. Before the intervention the cure rate of STIs achieved by health services in Mwanza region was extremely low (Buvé

et al., 2001). One can argue that if case detection and management of STIs had been better many HIV infections in Mwanza would have been averted. Coverage by health centres in the region was quite good and the health centres were staffed by people with an adequate basic training. However, over the years a number of problems had accumulated. Guidelines for the treatment of STIs were not updated or did not reach the health centre staff. The health centres received antibiotics with which STIs could not be treated effectively. Before the arrival of the intervention team in the early 1990s health centre staff had never received refresher training in STIs and supervision was insufficient. With relatively simple means a considerable impact was achieved on the incidence of HIV infection. A basic health infrastructure was, however, crucial to get the intervention in place in a timely and effective manner.

The challenge continues to upscale the experience of the Mwanza trial. It cannot be denied that there are many obstacles to do this, the main one being the bad condition of health services in most developing countries and the low utilization by patients with an STI. This has led several donor agencies, NGOs and northern research groups to give up altogether in trying to improve case detection and management of STIs through existing health services and to explore alternative strategies. In Cameroon and Uganda experiments have been conducted with social marketing of antibiotics for the treatment of STIs (Crabbé *et al.*, 1998; Jacobs *et al.*, 2003). These experiments were inspired by the observation that a high proportion of STI patients resorted to self-medication. Others have suggested programmes of mass treatment of STIs, but there is now a consensus that such strategy would not be feasible at the general population level and could at best be considered for sex workers.

We contend that the best way forward is to work with existing basic health services and improve their capacities. If utilization of health services by STI patients is low, the reasons for this should be explored and measures taken to meet the concerns of patients. This may include setting up specialized services. Results cannot be expected within a very short time, but will be sustainable in the long term.

Prevention of HIV transmission from mothers to children. In 2002, 800 000 children under 15 years old were infected by HIV mainly through mother-to-child transmission (MTCT) (UNAIDS and World Health Organization, 2002). Nine out of 10 of all HIV-infected babies were born in Africa. The transmission risk is between 15% and 25% for HIV-positive women who do not breast feed and varies between 25% and 45% for HIV-infected women who do breast feed.

The first strategy to reduce MTCT of HIV remains preventing the parents from becoming infected in the first place. Advances in the prevention of MTCT by HIV testing, antiretroviral prophylactic treatment and elective caesarean section have resulted in very low transmission rates in Europe and North America, in the range of 1%–2% (The International Perinatal HIV Group, 1999). Shorter regimens of zidovudine prophylactic treatment and a two-dose regimen of nevirapine, have also been shown to have a significant impact on the transmission risk (Nolan *et al.*, 2002). The demonstration of the efficacy of shorter prophylactic regimens that are more feasible and cheaper has opened up new perspectives for the prevention of MTCT in developing countries.

The simpler regimens of prophylactic treatment allow in principle for the prevention of MTCT to be integrated in existing services for pregnant women and young children. A number of basic conditions, however, will have to be met. Antenatal services must be available, accessible and acceptable. If something as sensitive as voluntary HIV testing and counselling is to be introduced in the antenatal services, women need to have confidence in these services. For instance in a pilot project on the integration of prevention of MTCT in antenatal services in Abidjan, fear of breach of confidentiality was one of the reasons why women did not come back to get their HIV test results (Msellati *et al.*, 2001). More time will need to be devoted to each woman, especially at the first antenatal visit when the counselling is done and when the HIV test is proposed. Post-test counselling of HIV-infected women should include counselling on infant feeding practices and on safe modes of delivery. Services need to have sufficient staff to cope with this extra workload. In Abidjan extra staff had to be seconded to the four antenatal clinics where the project was carried out (Msellati *et al.*, 2001). There will need to be an uninterrupted supply of HIV test kits, antiretroviral drugs and—depending on the regimen used—supplements to prevent anaemia. In addition supplies for routine antenatal care such as malaria prophylaxis, haemoglobin testing, iron supplements and STI care should be consistent. Women should preferably deliver in health facilities so that treatment of the newborn can be ensured, and that mother and child receive correct postnatal care. This implies that maternity services should be available, accessible and acceptable, and that supplies and equipment are available to ensure universal precautions against nosocomial transmission in the labour ward. Women and their children will need to be followed up to ensure that the mother adheres to advice on breast feeding and to meet care needs.

These conditions are met in well functioning services for women and children but, as the example of the pilot project in Abidjan showed, in many settings antenatal clinics and obstetric services will need to be strengthened including increasing manpower. Quality of the services will need to improve and additional resources (personnel, laboratory capacity, drugs) should be made available to cope with the additional responsibilities associated with a programme of MTCT prevention.

Care of HIV-infected people

In settings where public health services are barely able to cope with the workload of HIV uninfected patients—which is the case in most of sub-Saharan Africa—care of HIV-infected patients has not been considered cost-effective and the highest priority is accorded to prevention (Marseille *et al.*, 2002; Creese *et al.*, 2002). The result is that minimal investments have been made in the training of health staff in the management of HIV associated morbidity and in the provision of adequate essential drugs. NGOs have tried to meet some of the demands for care by providing psychosocial support and by setting up home based care programmes. In many instances these initiatives have been taken in isolation from public health services and there are no well functioning referral systems.

The perspectives have changed over the past few years, however. The use of cost-effectiveness analyses to decide whether or not to treat HIV-infected patients is

increasingly being challenged. There is a loud outcry about the glaring inequality of access to life prolonging antiretroviral treatment for HIV-infected patients in developing countries and in industrialized countries. Apart from humanitarian considerations, there is growing consensus that treatment of HIV-infected persons can have a leverage on prevention and mitigate the negative socio-economic effects of the HIV epidemic (Piot *et al.*, 2002). Until recently, the high prices of antiretroviral cocktails were prohibitive and they were not considered an option in resource constrained settings. Several non-governmental organizations and activist groups (Médecins sans Frontières, Oxfam, Treatment Action Campaign, Act-Up) are putting pressure on governments, international organizations and the pharmaceutical industry to increase access to antiretroviral treament for HIV-infected patients in developing countries. As a result pharmaceutical companies have started making agreements with individual countries to supply antiretroviral drugs at reduced prices. The largest price reductions, however, have been achieved by the production and use of generic antiretroviral drugs. Brazil has taken the lead in this endeavour. In several countries prices have dropped from about US$10 000 per patient per year to about US$500–600 per patient per year. One generic drug company is selling a cocktail of three first line drugs at US$250 per patient per year. In 2001 the World Trade Organization issued the Doha Declaration on the TRIPS agreement and Public Health. This declaration acknowledges the devastating effects of HIV/AIDS, tuberculosis and malaria in developing countries and recognizes that public health related patents may have to be treated differently from other patents (World Trade Organization, 2001). Mechanisms that can be employed by developing countries to provide drugs at reduced prices include compulsory licensing and parallel import. Lastly, in 2002 the World Health Organization put antiretroviral drugs on the revised list of essential medicines (Laing *et al.*, 2003).

In some middle income countries with HIV epidemics of moderate severity, such as Brazil and Thailand, treatment with antiretroviral drugs has become a realistic option. The experiences from these countries, however, cannot readily be extrapolated to low income countries and middle income countries with high prevalence of HIV infection, such as Zambia, Zimbabwe, Botswana and South Africa (Table 1). In these countries ministries of health are faced with a double challenge: (1) how to ensure psychosocial support and management of opportunistic infections (treatment and prophylaxis) for all HIV-infected persons; and (2) how to meet the increasing demand for antiretroviral treatment.

If, so far, public health services in developing countries have failed to provide appropriate care for the majority of HIV-infected patients, it is because they have been underfunded (lack of updating of skills and lack of supplies), rather than because the management of opportunistic infections requires sophisticated laboratory technology and special drugs that are not within the reach of public health services. The most common opportunistic infections in developing countries, including tuberculosis, community acquired pneumonia, chronic diarrhoea, candidiasis, can in principle be managed at the level of health centres and district hospitals. In many settings, however, this will require inputs to strengthen health services, including refresher training, motivation and regular supervision of health personnel, and regular supply of the necessary drugs and diagnostics.

Table 1. Prevalence of HIV infection, per capita GNP and annual per capita expenditure on health: selected middle and low income countries

Country	Total per capita expenditure on health US$ (1997)[a]	Per capita GDP US$ (1999)[b]	Prevalence of HIV infection (end 1999)[c]
Middle income			
Botswana	219	7690	18% (290 000/1 592 000)
South Africa	396	7380	11% (4 200 000/39 796 000)
Thailand	327	6690	1% (755 000/60 841 000)
Brazil	428	6480	0.3% (540 000/168 000 000)
Low income			
Kenya	58	1190	7% (2 100 000/29 507 000)
Zambia	64	960	10% (870 000/8 974 000)
Zimbabwe	130	2350	13% (1 500 000/11 509 000)

[a]World Health Organization, 2000b.
[b]United Nations Development Programme, 1999.
[c]UNAIDS, 2000.

In many developing countries antiretroviral drugs have been circulating for some time in the private sector and even in the informal sector. Distribution or leakage of these drugs to an unregulated health sector constitutes a real danger for the development of drug resistance. The ultimate victims are the patients who may find themselves financially ruined and infected with a multi-drug resistant strain. This problem has several roots and requires solutions at several levels. At the central government level there needs to be the political will, as well as the technical capacity, to regulate the import, distribution and use of antiretroviral drugs within the private sector. But as long as the demand for antiretroviral treatment largely exceeds the supply *and* as long as health staff remains underpaid and demotivated, thefts and unsupervised use of drugs will remain a problem.

While in Brazil and Thailand antiretroviral treatment is provided through a network of public health services that have a fair coverage (World Health Organization, 2000a), in most countries of sub-Saharan Africa only limited numbers of HIV-infected patients are on treatment. Outside the private for-profit sector antiretroviral treatment is available through UNAIDS and/or government supported initiatives in Senegal, Ivory Coast and Uganda. NGOs such as Médecins sans Frontières have started pilot projects of access to antiretroviral treatment that are relatively small scale. Research projects, like randomised trials that compare different drug cocktails, cater for only a few hundred HIV-infected people each. Lastly, more and more employers in Africa are embarking on programmes of antiretroviral treatment for their workforce, including the diamond mines in Botswana, Goldfields in South Africa, Anglo-American in Zambia, the Kenya Ports Authority, the Bank of

1) Voluntary HIV counselling and testing services.

2) Capacity to recognise and appropriately manage common HIV related morbidity.

3) Reliable laboratory monitoring services.
   Reliable low cost alternatives for assessing the CD4+ are being explored. Some groups advocate the syndromic management of HIV-infected patients (i.e. reliance on clinical symptoms for initiation of treatment and follow-up of patients).

4) Assurance of an adequate supply of drugs, including drugs for the management of opportunistic infections.

5) Identification of sufficient resources to pay for treatments on a long term basis.

6) Information and training of health professionals who will prescribe ART.

Figure 1. Essential conditions for the introduction of antiretroviral treatment in health services (World Health Organization, 2000a)

Uganda, the New Vision newspaper in Uganda and a multinational brewery in Central Africa. However, if the ultimate goals of programmes of access to antiretroviral treatment, are to put right an inequality, improve the overall life expectancy of HIV-infected people, decrease the transmission of HIV and mitigate the socio-economic impact, many more patients have to be reached than is currently the case. Scaling up of programmes of access to antiretroviral treatment is not only hampered by the drug prices and the lack of laboratory capacity to monitor HIV infection (Figure 1), but also by the lack of implementing capacity, in the first place skilled health care workers. Scaling up thus calls for massive investments in strengthening of health systems, including strengthening (or setting up) of a safe distribution system for antiretroviral drugs; training staff in prescribing antiretroviral treatment and in following-up patients; strengthening laboratories; and setting up systems to counsel patients and ensure compliance.

WHAT ARE THE LIKELY EFFECTS ON HEALTH SYSTEMS OF INCREASED EFFORTS IN THE AREA OF HIV/AIDS PREVENTION AND CARE?

HIV/AIDS programmes of prevention and care, if well integrated in public health services, can contribute to the strengthening of health systems. Especially

programmes to improve care of HIV-infected patients can restore the confidence of communities in the health services and boost the morale of health staff which may have beneficial effects on other activities as well. For instance, one of the reasons for the low utilization of public health services cited by STI patients in Mwanza Region, Tanzania, was the lack of privacy and the moralizing attitude of the staff (Rajani *et al.*, 1997). The STI training programme of the intervention put a lot of emphasis on non-stigmatizing attitudes to patients (Grosskurth *et al.*, 2000). Similarly, in Zambia adolescents did not feel welcome in health centres if they presented a reproductive health problem (Vandenhoudt, 2001). Through training of health staff and working with young peer educators, staff became more receptive to the concerns of young people. In many parts of sub-Saharan Africa bed occupancy—even in district hospitals—by AIDS patients is very high. The high mortality among hospitalized patients poses a big psychological burden on health staff. With training and the provision of supplies necessary to manage HIV-related morbidity health staff might again be motivated, as their sense of achieving something may improve. Lastly, HIV/AIDS in Africa has generated renewed interest in counselling of patients. This renewed interest in counselling skills of the health provider will contribute to a more caring attitude towards all patients and a more comprehensive approach which addresses the physical, social and psychological well-being of the patient.

Investments in training and laboratory equipment that are needed for the care of HIV-infected patients may have a beneficial effect on the general functioning of health services. The high laboratory standards that are required for HIV testing have forced laboratories to improve their operating procedures and quality assurance. As for the distribution of antiretroviral drugs, in most countries it is difficult to imagine safe distribution of these drugs through the existing systems. A programme of access to antiretroviral drugs will have to rely on a watertight drug import and distribution system and this may initially have to be a separate system. Experience acquired with such system, however, might eventually be useful for general systems of distribution of drugs and medical supplies.

However, the integration of HIV/AIDS prevention and care activities or the intensification of such activities in existing health services will need to be carefully considered. The possible implications of integration or intensification of HIV/AIDS measures for other health care activities will have to be anticipated. The health system as a whole must be taken into account in an integrated way. If not, a new inequity could be created in which a disproportionate amount of resources would be allocated to HIV-infected patients while other patients (e.g. those with another chronic or infectious disease, malnourished children, women with obstetric problems) would continue to suffer from inadequate care. There are already examples of health facilities where clients of counselling services are received in nicely refurbished offices by well motivated staff who have a supportive attitude, while other patients continue to be received in crowded outpatients departments operated by unmotivated and rude health workers. If the HIV/AIDS programmes are donor driven, there may be a demand for quick successes. This may translate into special incentives for better-qualified staff to join a programme of access to antiretroviral treatment. Such an approach would have a serious destabilising effect on the functioning of fragile health systems. It is thus important to have a systems approach that

seizes opportunities to use additional HIV/AIDS resources to strengthen general health services. There is need for much advocacy on these aspects at the decision level of donor agencies, including the Global Fund to Fight AIDS, Tuberculosis and Malaria.

CONCLUSIONS

More resources for the prevention of HIV infection and the care of HIV-infected persons are badly needed, but these additional resources may not have the desired impact if health systems in developing countries are not strengthened. This is particularly true for sub-Saharan Africa. The debate on the use of the funds for HIV/AIDS (and malaria and tuberculosis) should not deteriorate to a scramble for funds between advocates of disease control programmes and proponents of stronger health systems. The debate, while clearly value-based, should be driven by technical considerations. First, the opportunities that exist even in weak health services have to be examined and used. Ignoring what already exists would be wasteful. Secondly, any activity in the area of HIV/AIDS prevention and care, carried out within health services, can have a ripple effect on other health care activities and vice versa. This interactive effect needs to be acknowledged and built on.

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