

Sex is dangerous

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ABSTRACT – Infectious diseases with high mortality, disability and creating public anxiety are not new, but despite this our initial responses to HIV/AIDS have been primitive and slow. Since the start of the epidemic over 60 million people throughout the world have been infected, with the main focus of the epidemic currently in Sub-Saharan Africa. However, there is every indication that the epidemic will move more towards South-East Asia, with increasing numbers in India and China. Infection with HIV has a profound effect on individuals and their families, and can also lead to destabilisation of societies through its effects on the economy, institutions and security. Considerable emphasis has been placed recently on the widespread use of anti-retroviral therapy. This is a worthwhile initiative but is only part of a balanced array of approaches, which requires building a political consensus, social economic interventions and modifying the biology. Strong political leadership is still required, with an approach that recognises that the socio-economic drivers of this epidemic.

KEY WORDS: AIDS/HIV, development, economic and institutional instability, individual, instability of security services, poverty

Gavin Millroy was born in 1805 in Edinburgh, the son of a silversmith. He was educated in the city of his birth, qualifying in medicine in 1824 at the extraordinarily young age of 19 years. Early in his career he became interested in public health and epidemiology and subsequently sat on several official commissions and committees. For example, between 1855 and 1856 he served on the Sanitary Commission in the Crimean War. He arrived in Balaklava on 22 July 1855 and was shocked by the neglected latrines, overcrowding, poor spacing between the troops' huts with minimal ventilation, inadequate water supply and a burgeoning epidemic of cholera. His solutions were based on good public health principles: better spacing between huts, deodorising of latrines, burial of manure heaps, and speedy internment of animal carcasses.

Gavin Millroy's observations in the Crimea on the appalling state of hygiene and health of the British troops, and the increasing awareness by others of the growing problems with venereal diseases, led to the

Contagious Diseases Acts of 1864, 1866 and 1869. In the 1860s, the army had a major problem with these infections, with a reported annual incidence of venereal diseases of 369 per 1,000 men. This high rate in the British army contrasted with much lower rates in the French troops of 70 per 1,000, and in the Prussian army of 34 per 1,000. Let us not forget, of course, that this was the age in which we 'led the world'. The morbidity from venereal disease caused considerable problems for the army, the resulting loss of manpower being equivalent to the withdrawal of every soldier in the British army for eight days per year, or two full battalions every year.

I have always been fascinated by the army's pragmatic approach to the public health issue of venereal diseases during the late nineteenth and early twentieth centuries. For example, in the 1860s they provided mercury treatment at the same time as recognising that prevention, through better recreational facilities such as exercise and libraries, was important. A good run followed by a good novel may not be today's answer to prevention, but at the time those measures were tempered by total pragmatism. For example, in India, cantonment brothels were accepted, and prostitutes were checked by the army in an attempt to reduce venereal diseases (VD) amongst the troops. At exactly the same time as the army was dealing with the issue, some of the leaders of the medical profession were putting their heads in the sand and all too often adopting uncaring and moralistic stances. For example, Dr Samuel Solly, President of the Royal Medical and Chirurgical Society, gave evidence to a government committee in 1868 and said of syphilis that it was self-inflicted, was avoidable by refraining from sexual activity, and was 'intended as a punishment for our sins and that we should not interfere in the matter'.

Sex was dangerous then as it is today, but we do not seem to have learnt enough from history. At the beginning of the AIDS epidemic in the UK, Ian Weller and I wrote a leader in the *BMJ* entitled 'AIDS: sense not fear',¹ in which we described how hysteria had taken over from reasoned judgement and how at times we had found it difficult to transport, feed, investigate and bury our patients. These problems were further stoked by society's ambivalence towards sex and, in particular, homosexuals. For example, Pat Buchanan, writing of homosexuals and AIDS in the *New York Post* in May 1983 said, 'they [homosexuals]

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have declared war upon nature and now nature is exacting ... an awful retribution?² This was no different from Dr Samuel Solly 115 years earlier maintaining that VD was a punishment for our sins and we should not interfere.

There are many tragedies surrounding HIV/AIDS, but one of the saddest, as I indicated earlier, has been our inability to learn from the past. After all, infectious diseases with high mortality, disability, and generating considerable public anxiety are not new. But our initial responses have often been primitive rather than rational, and consequently we have lost valuable time in developing humane and comprehensive control and treatment programmes. Ian and I said all of this in our leader 20 years ago, and how shocking it is now to see political leaders still denying and challenging the reality of HIV/AIDS, despite 40 million people living with the infection and, in many instances, the destabilisation of their countries due to this epidemic.

Nearly a quarter of a century has passed since the first reports of what we now know as AIDS. Yet many countries, and in particular their political leaders, have been slow to act. We are dealing with a humanitarian crisis that is much larger than a 'mere' medical problem and now poses a major threat to security and development. Currently, governments throughout the world are engaged in a war against terrorism in the belief that international security is increasingly under threat. HIV/AIDS is an equal danger, with personal, economic, community, national and international security threatened by the epidemic.

The magnitude of the problem

The stark message from the Joint United Nations Programme on HIV/AIDS (UNAIDS) is that by the end of 2003, 60 million people throughout the world were infected with HIV, of whom 40 million are still living (Table 1).³ Thus, 20 million have already died so far and in 2003 this totalled 3 million, which translates into nearly 8,000 deaths per day. During 2003, 5 million more individuals became infected, the equivalent of 14,000 new infections per day.

The current focus of the epidemic is Sub-Saharan Africa, with 25–28 million individuals there living with HIV/AIDS. The

Table 1. Global summary of the HIV/AIDS epidemic, December 2003.

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|---|-------------------------|---|
| Number of people living with HIV/AIDS | Total | 40 million (34–46 million) |
| | Adults | 37 million (31–43 million) |
| | Children under 15 years | 2.5 million (2.1–2.9 million) |
| AIDS deaths in 2003 | Total | 3 million (2.5–3.5 million) |
| | | |
| People newly infected with HIV in 2003 | Total | 5 million (4.2–5.8 million) |
| | | |

population prevalence of HIV varies across Africa, ranging from 1% in Mauritania to almost 40% in Botswana and Swaziland. A decade ago, Swaziland's prevalence stood at only 4%. The focus is therefore on Africa, but the pandemic is spreading across all continents. The United States National Intelligence Council recently looked at the epidemic in five countries of strategic importance to it, namely Nigeria, Ethiopia, Russia, India and China, and estimated that numbers in these five countries will overtake those in central and southern Africa.⁴ The estimates are that numbers in these five 'next wave' countries, which represent 40% of the world's population, will soar from the current 14–23 million infected to 50–70 million by 2010. India and China will be major contributors, the former with a current estimated 5–8 million infected individuals potentially rising to 20–25 million by 2010, and in China numbers rising from 2 to 10–15 million over the same time period (Fig 1).

The prevalence of HIV in pregnant women is truly terrifying. For example, in Gaborone (Botswana) and Manzini (Swaziland), nearly 40% of antenatal attenders are infected, and 35% in KwaZulu, Natal. Vertical transmission can be virtually eliminated by the use of anti-retroviral treatment, but only a mere 1% of pregnant women in heavily affected countries have access to therapy. Infected mothers die and leave orphans, who are often themselves infected. Approximately 14 million children under

Fig 1. High and low estimates of current and future HIV/AIDS-infected adults in next wave countries, 2002 and 2010. (Reproduced from Ref 4.)

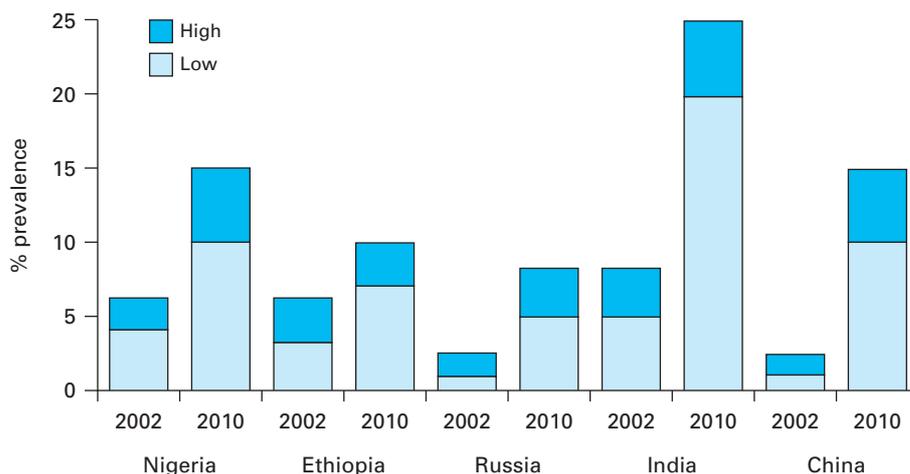
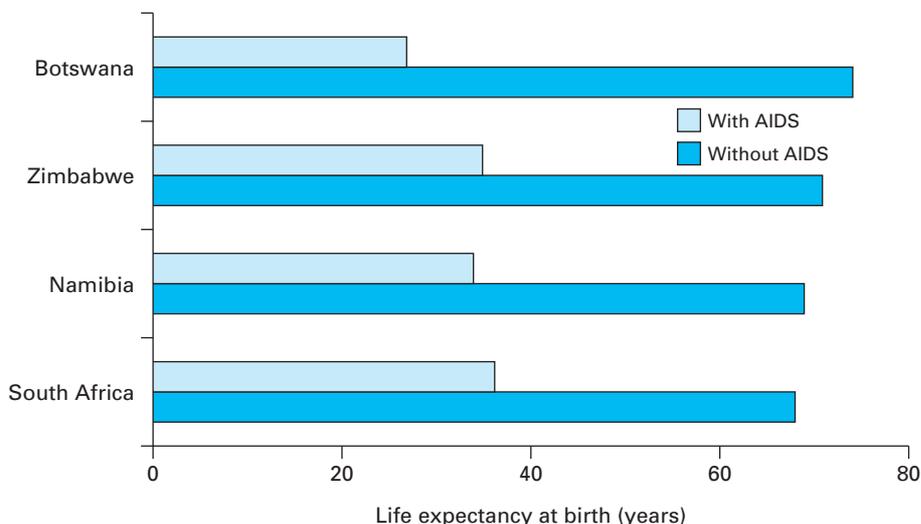


Fig 2. Impact of AIDS on life expectancy in selected countries by year 2010. (Reproduced from Ref 6.)



15 years of age, 95% of them living in Africa, have lost their mothers or both parents to HIV/AIDS, a figure that is expected to reach 25 million by 2010, which represents 12% of the region’s children.⁵ In Uganda, 25% of households are providing for an orphan. Infected infants die; for example in Botswana, infant mortality is 120% higher than it would have been without AIDS, and in Namibia it is 58% higher. In South Africa, this increase is 44% and expected to rise to 60% by 2005–2010.⁶

These current figures and projections are bound to have a major demographic impact throughout the world through reduced life expectancy. For example, in Lesotho, a 15-year-old has a 75% chance of becoming infected by the age of 50 years. By 2010, there will be significant reductions in life expectancy at birth (Fig 2).⁷ This is particularly marked in Zimbabwe (38 years), Swaziland (36 years), and Lesotho (32 years). Countries such as Botswana, Lesotho, South Africa, Swaziland and Zambia will have negative population growth by 2015. In Botswana, by 2020, half of the potential population aged 35–59 will have been lost to HIV/AIDS and a third of those aged under 15 years.⁷

Effects on the individual/families

Once an infected individual becomes ill or dies the consequences for the relatives are profound, with family units dissolving and disintegrating. The impact on a household affected by HIV is three-fold:

- loss of income
- increased medical costs and eventual funeral costs
- absenteeism of family members from school and/or work.

UNAIDS have estimated that when a family member is infected with HIV the household income will decline by 40–60%.⁸ This reduction in income can result in malnutrition; for example, in the Côte d’Ivoire, food consumption has been shown to decrease by 40% within HIV affected families. Zimbabwean studies have indicated that households experiencing an AIDS death show a reduction in output of maize of 61%, cotton 47%, vegetables 49%, groundnuts 37%, and the number of cattle owned by 29%.⁹ Peter Piot, Executive Director of UNAIDS, said that, ‘For many rural households [in Africa]

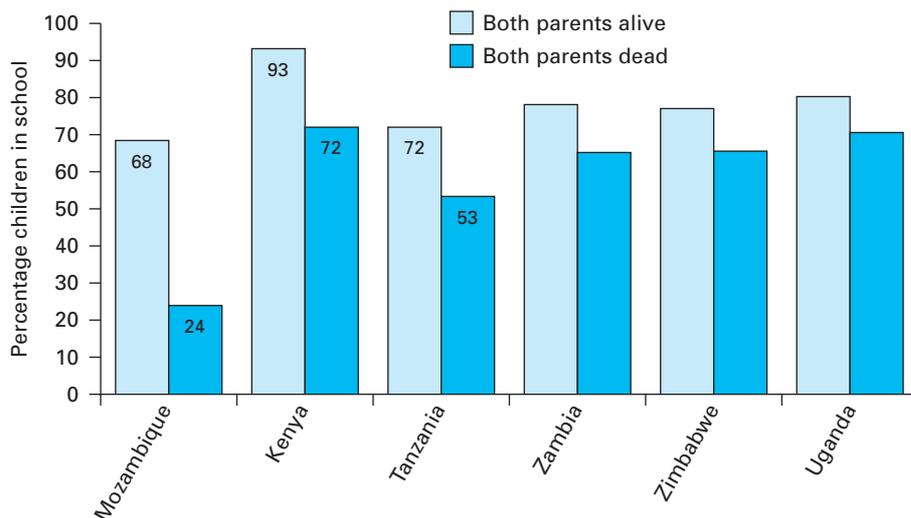


Fig 3. Percentage of orphaned and non-orphaned children (aged 10–14) in school. (Reproduced from Ref 11.)

AIDS has turned what used to be a food shortage into a food crisis', and Whiteside and De Waal have characterised HIV/AIDS as 'a new variant of famine', with the emergence of the AIDS poor.¹⁰

In many countries, the ill have to pay for their care and, in an attempt to offset this increase in expenditure, children, especially girls, drop out of school to take on caring and breadwinning roles. Orphaned children also drop out of school, which can no longer be afforded (Fig 3). This is particularly marked in countries such as Mozambique and Kenya.¹¹ These lost educational opportunities result in essential loss of earning potential as adults. These orphans will become a lost generation with little or no education and poor socialisation, having suffered from social upheaval. They will become an economic underclass.

Another example of dissolving family units is that children may be sent to live with distant relatives or grandparents, who take on the brunt of the parental role often at a time in their own lives when they are not fully suited or able to do this and when their own income is reduced. A study in Zambia reported that in 65% of households in which a mother had died, children had been sent to live with their relatives who were usually elderly, poor and unable to provide adequate care.

Effects on the economy

The economic consequences of HIV/AIDS are substantial but often forgotten, with so much concentration on the basic epidemiology and access to anti-retroviral treatment. The World Bank has recognised this: 'AIDS can effectively destroy a national economy by decimating the food supply, decreasing the productivity of the workforce and increasing the cost of doing business,¹² and at the G8 Summit in 2002 it was noted that 'the consequence of [AIDS] stands to undermine all efforts to promote development in Africa.'

Most recent estimates indicate that the pandemic has resulted in a reduction of national economic growth of 2–4% across Sub-Saharan Africa, and the World Bank estimates that countries with prevalence rates of 20% can expect Gross Domestic Product (GDP) to decline by 1% per year.¹³ The Bank also estimates that South Africa's GDP will be 17% lower by 2010 than it would have been without HIV/AIDS, and that Botswana's economy will have shrunk by 30% by the same year. Many countries are now witnessing

a decline in human capital. In Namibia, AIDS is expected to eliminate up to one-third of the labour force in the agricultural, construction, tourism, mining, education and transport sectors by 2020 (Fig 4). Other parts of Africa are equally affected. HIV also leads to a shrinking market as the consumer base declines and becomes poorer.

The United Nations Food and Agricultural Organisation estimated that by 1985–2000 7 million agricultural workers had died from AIDS in the 27 hardest hit countries, and that a further 16 million deaths will occur in this sector by 2020.¹⁴ In many African countries, farming and rural occupations provide livelihoods for over two-thirds of the population and HIV can therefore have a profound impact on population and individual food security. For example, in Burkina Faso food production has been reduced by up to 50% as a result of HIV.

Most industries are dependent on transport. Transport workers, particularly truck drivers, are at high risk of contracting and spreading HIV, often in a symbiotic relationship with commercial sex workers who frequent truck stops and have high levels of infection. For example, 90% of commercial sex workers targeting truck drivers on the Botswana/South African border are infected.



Fig 4. Estimated loss of labour force by 2020.

All of this makes dismal news and means that many of the millennium development goals will not be achieved, particularly in relation to poverty and education. The goal for poverty is that between 1990 and 2015, the number of people whose income is less than \$1 per day should be reduced by half. Currently, nearly 25% of the world's population are at this level. In Sub-Saharan Africa, the proportion of people living on less than \$1 a day increased between 1990 and 1999 from 47% to 49%, and by 2015 will be over 50%.¹⁵

Effects on institutions

HIV/AIDS will also have a profound impact on social cohesion and community security. In their report on HIV/AIDS in 2001, the House of Commons Select Committee on International Development said, 'There is a *prima facie* argument, given all the evidence we have received that HIV/AIDS increases poverty, that there will be greater social insecurity and possibly conflict as a result of the HIV/AIDS epidemic'.¹⁶

The way certain institutions are affected shows how communities can start to fragment with consequent effects on security. The data on infection in police forces are sparse and often indirect but, for example, amongst the Kenyan police force, HIV/AIDS accounts for 75% of all deaths, and Namibian police authorities have admitted that 'HIV/AIDS has become a heavy burden for police, coffers and administration load'.¹⁷ In South Africa, the police and military forces are not allowed to donate blood.

It is thought that civil servants are disproportionately affected by HIV since they often travel, can be separated from their families and have a relatively high income. For example, as far back as 1998, it was reported that one in seven South African civil servants were infected with HIV.¹⁸ This loss of civil servants will weaken state institutions and lead to instability.

Teachers and healthcare workers also have high levels of infection and are not easy to replace. Africa is expected to lose 10% of its teachers by next year, setting back education by 100 years.¹⁹ In South Africa, one-third of teachers are HIV positive, in Zambia 40%, and in Swaziland 70%. These levels result in closure of schools and children being deprived of basic education.

Healthcare workers are not immune to HIV. In Malawi, up to 50% of healthcare workers will be dead by 2005.²⁰ South African reports indicate that 17% of their primary healthcare workers and 20% of student nurses are infected. In one hospital in Zambia, deaths of healthcare workers have increased 13-fold in 10 years. In some countries, healthcare staff are dying faster than they can be trained.¹⁶

Effects on security

It is an uncomfortable fact that military forces, peacekeepers and peace observers rank amongst the groups most affected by HIV/AIDS. From 40% to 60% of military personnel are infected in Angola, and in the Congo.²¹ The Panos Institute has reported that HIV/AIDS could kill up to 50% of the Malawi military by 2005.²⁰ It takes no leap of the imagination to realise that these

high levels of infection amongst military personnel will severely compromise internal and international security.

The United Nations Security Council debated AIDS in January 2000. It was the first time that the Council had ever discussed a health issue as a threat to peace and security. Kofi Annan told the Council:

*The impact of AIDS in Africa is no less destructive than that of warfare itself. By overwhelming the continent's health and social services, by creating millions of orphans, and by decimating health workers and teachers, AIDS is causing social and economic crises which in turn threaten political stability ... In already unstable societies, this cocktail of disasters is a sure recipe for more conflict. And conflict, in turn, provides fertile ground for further infections.*²²

The solutions

There are no easy or simple solutions in preventing HIV. There are four main approaches, all of which need to work in unison, namely:²³

- building a consensus
- socio-economic intervention
- altering risky individual behaviour
- modifying the biology.

Building a consensus

Strong political leadership on HIV can create an acceptance and a national consensus. Good examples of this are to be found in the UK, Zambia and Uganda. In contrast to these three, however, stands South Africa, whose response has been delayed and shameful. As long as 17 years after the discovery of HIV in 1983, but as recently as May 2000, President Mbeki convened his International Panel to consider the cause of AIDS, and at the same time wrote to all world leaders comparing the opposition voiced by many to the dissident scientists to whom he was listening as being similar to 'racist apartheid'.

The South African Government has been dragged kicking and screaming into making anti-retroviral treatments available. Throughout 2002 and 2003, African National Congress ministers still continued to prevaricate; for example, the Health Minister was reported as saying that South Africa could not afford drugs for HIV/AIDS partly because it needs submarines to deter attacks from nations such as the USA: 'Look at what Bush is doing, he could invade'. As recently as August 2003, opening the South African national conference on HIV/AIDS, she emphasised the importance of garlic and African potatoes as a remedy for HIV. The South African Government's response has been shameful, marked by the questioning of well-established science, playing the racial card and underplaying the size of the problem. There is no doubt about the size of the problem, with 5 million South Africans now infected. Many of the infections could have been avoided with earlier Government leadership and actions similar to those seen in Uganda, where age at first sexual intercourse has risen, and number of sexual partners and sero prevalence have declined.

Socio-economic interventions

The HIV/AIDS epidemic must be viewed in the context of the society in which it occurs. Using a wider socio-economic paradigm is necessary, although it underlines the complexity of this epidemic and its solutions. There are fundamental conditions within many societies which help to drive HIV and sexually transmitted infections. For example, women often have a lower position and status within the society, with less educational opportunities, an inability to negotiate the use of condoms, and in the wider society an all-too-easy acceptance that men can behave differently from women in relation to sexual matters. Of course, it is not as simple as that since poverty encourages migration of men from rural to more urban environments to seek work. They are often separated from their families for long periods and therefore sleeping with commercial sex workers, who themselves migrate to urban centres and along truck routes. The socio-economic changes required to empower women and reduce poverty and prostitution are in many ways more complex than providing anti-retrovirals or HIV testing. This is certainly an area where the international community can make a significant contribution in relation to poverty alleviation and debt relief.

Reducing risky behaviour

The traditional approaches to preventing HIV and sexually transmitted infections (STIs) are still crucial. Education is important, particularly in schools and in the workplace, using a variety of approaches. As adults, we have a responsibility to give young people accurate, straightforward information, which both prepares them for a healthy sexual life and allows for informed decisions. We are still too squeamish about this area of education, particularly in the UK where sex and relationship education is still not a statutory part of the national curriculum. Young people reiterate the criticism that what they are currently getting is too late, too little and too biological. Experience in both Europe and Africa shows that good and continuing sex and relationship education increases the age at first sexual intercourse and reduces the regret young people, particularly women, feel about their first sexual experience.

Despite the effectiveness of condoms, their efficacy has been undermined by the Catholic Church. For example, in 2003 the President of the Vatican's Pontifical Council for the Family, Cardinal Alfonso Lopez Trujillo, said, 'The AIDS virus is roughly 450 times smaller than the spermatozoa. The spermatozoa can easily pass through the net that is formed by the condom.' This is a clear indication by him that condoms are ineffective both as a contraceptive and in preventing HIV transmission. All the scientific research refutes this and supports the fact that consistent and correct use of condoms reduces the risk of HIV and other STIs by 90%, whilst of course reducing the risk of pregnancy.

Programmes to market and encourage the use of condoms have been at the heart of many control programmes and are particularly useful since they reduce the acquisition and transmission of both the traditional STIs and HIV infection. In

Africa, there has been encouraging evidence that increased condom use has been accepted by high-risk groups such as commercial sex workers and their clients, and that this has altered levels of infection. Recent studies amongst commercial sex workers in the Côte d'Ivoire and Uganda confirm earlier findings, namely that consistent use is related to a reduction in the prevalence of HIV infection and other STIs.^{24,25} Likewise, in South East Asia there have been effective condom promotion campaigns, particularly in Thailand where considerable effort was put into educational programmes for commercial sex workers and their clients. This was followed by an increase in condom usage, reported by these workers, from a baseline of 14% to 94% of commercial sex acts, with a concurrent decline in bacterial STIs in men over the same period.²⁶

Modifying the biology

The last component of the control programme relates to modifying the biology. It should not be forgotten that the major method of transmission of this infection is through sexual intercourse and that STIs increase both the acquisition and transmission of HIV. It is therefore important to develop coordinated HIV/STI interventions. The Mwanza study in Tanzania is a good example of how effective treatment of STIs can reduce HIV incidence.²⁷ Other approaches to modifying the biology are by reducing viral load through treatment of HIV and also concurrent infections, and by developing vaccines.

The balanced approach

Ideally, both HIV and STI programmes should be integrated. Recently, considerable emphasis has been placed on increasing the availability of anti-retrovirals, with a strong lead by UNAIDS/WHO who have set a target of 3 million people to be on treatment by 2005. Currently, the disparity between resource-rich and resource-poor countries is considerable. At the end of 2002, only 1% of people in need of anti-retroviral treatment in Sub-Saharan Africa were receiving it, and by 2003 there had been only a small increase. In most African countries, anti-retrovirals are available to less than 5% of the population who require them.²⁸ It is of course important to increase treatment coverage, but healthcare systems need to be able to deliver and monitor, as well as obtain good coverage and compliance. Treatment programmes must be sustainable. The drive for a vaccine is also important but, while waiting for this, we must not be deflected from the balanced array of approaches outlined above. Prevention continues to be the cornerstone of our public health approach to HIV and other STIs and will still be important even when a vaccine has been developed.

John Stover, from the Futures Group International in the USA, and colleagues have modelled the impact of a comprehensive scaled-up prevention programme, as outlined above, compared to current *ad hoc* approaches with poor coverage.²⁹ The current *ad hoc* intervention packages will, of course, slow the epidemic but new infections will still occur at the rate of approximately 5 million per year. If we scale up and develop a

comprehensive programme of intervention to include school-based and outreach education programmes, condom promotion, voluntary testing and counselling, treatment of sexually transmitted infections and mass media campaigns, without taking into account the effect of anti-retroviral treatment, we will reduce the number of new HIV infections per annum to below 1.5–2 million per year as opposed to 5 million.

Conclusions

The problem of HIV/AIDS will not go away by being ignored. The epidemic is set to destabilise social structures, national economies and security. Political leaders must lead. There are more than enough agencies to deliver effective interventions, so governments should use current expertise and fund UNAIDS, WHO, the Global Fund, and other such organisations. The proliferation of foundations and bilateral aid with strings may not be the best way forward.

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