This is the oldest established named lecture of the College, endowed by Lord Lumley, and first given in 1584, and it has a glittering pedigree of previous lecturers, for example William Harvey in 1616. I read the account of the first Lumleian Lecture given on 6th May 1584 with some trepidation:

‘There was a great concourse of doctors, masters of surgery, and students. Dr Caldwell, aged and white-haired, started to deliver an oration but faltered and then broke down, so Dr Giffard, the President, made a short speech and then invited Dr Forster to deliver his lecture, which was universally admired. At the conclusion of the lecture Dr Caldwell was carried the short distance to his house in Doctors Common, but he never recovered, and died three weeks later at the age of 71’.

During the last academic year, I have spent a considerable amount of time working abroad, mainly for the World Health Organisation (WHO) in Bosnia, Uganda, Tanzania, Kenya, Zimbabwe, and India. Prior to this I have done many short-term consultancies, but it has only been during my sabbatical, spending much longer in the countries than I have previously been able to, that I have started to appreciate the complexity and myriad of factors associated with disease in the developing world. As a physician, I have always realised the importance of socio-economic and family structures both as determinants of health, and the effects on them of illness. But I now have a much more vivid sense of this, which has led me to a different understanding of how we need to tackle disease, particularly in this instance sexually transmitted diseases and HIV infection.

In this lecture I will look at the size of the problem and medical, social and economic effects of STDs and HIV infection, and offer some thoughts on how these problems could be tackled. Finally, I will look at our responsibilities as a developed nation to try to alter, rather than perpetuate, systems and mind sets of individuals, doctors, research workers, funding agencies, bilateral organisations and governments, all buffeted by different forces and constraints.

The size of the problem

The sexually transmitted diseases (STDs) are a major public health problem in developing countries, and the advent and increase of HIV infection during the last decade has highlighted the importance of infections spread by the sexual route:

- 80% of people infected with HIV live in developing countries
- 80% of HIV infection is spread by the sexual route (70% vaginal, 10% anal intercourse)
- 70% of HIV infection in Africa is in patients with an STD
- up to 30% of HIV infection in Thailand is amongst STD patients.

Both HIV infection and STDs have a major demographic, economic, social and political impact, particularly in sub-Saharan Africa, and increasingly in Asia. In 1993, the World Bank estimated that for women aged 15–44 years, the STDs (excluding HIV) were the second commonest cause of healthy life lost after maternal morbidity and mortality. In men in the same age group, HIV ranks first as the cause of healthy life lost.

Sexually transmitted diseases

Magnitude

The World Health Organisation (WHO) has been responsible for a series of estimates of the size of the problem represented by the STDs. The current estimate is 333 million new infections per year (trichomoniasis: 170 million, genital chlamydia: 89, gonorrhoea: 62, syphilis: 12). This does not include genital papilloma virus infection (warts), which the WHO in the past estimated at 30 million new infections per year, herpes at 20 million, and chancroid at 7 million. The major focus for STDs is South and South-East Asia with an estimated 150 million new cases in 1995, and sub-Saharan Africa with 65 million (Fig 1).

The estimates of cases in different continents can be supplemented by prevalence studies in particular country settings. Such studies indicate the extremely high prevalence rate of STDs in high-risk groups of prostitutes/commercial sex workers (CSWs). The prevalence of gonorrhoea can reach 50% in CSWs,
chancroid up to 16%, and syphilis 23–32% for acute or previous infection, with levels of Chlamydia trachomatis as high as 25%. In the developing world, prostitution is a driving force for HIV and STDs; for example, in Kenyan urban STD clinics, 60% of men with a gonococcal urethritis or chancroid reported commercial sex exposure as the probable source of infection. Other high-risk groups are men and women attending STD clinics in whom, as would be expected, levels of infection are found to be high.

Unfortunately, levels of infection can also be high in low-risk groups, namely women attending antenatal clinics (Fig 2). Very high levels of gonococcal and chlamydial infection have been reported in various studies carried out in Africa, Latin America and Asia. Rates are highest in sub-Saharan Africa, and lower in Latin America and Asia.

**Morbidity**

The STDs are important because of their complications and social stigma. The most important complications occur in women, and are pelvic inflammatory disease (salpingitis) and ectopic pregnancy, but the infections also increase the risk of stillbirth and prematurity and affect the neonate. In sub-Saharan Africa, 50% of cases of infertility can be attributed to prior tubal infection, usually with gonorrhoea or...
Infertility is a personal and family tragedy that can lead to social isolation and ostracism of women, and eventual divorce.

HIV/AIDS

Magnitude

As with the STDs, the estimates of HIV infection throughout the world are no more than estimates. The geographical distribution of the worldwide cumulative total of HIV infections is currently thought to be 27.6 million (adults: 25.2, children: 2.4), with most infections occurring in sub-Saharan Africa (19 million), and South-East Asia (5 million)\(^{11}\). In Thailand, one in 50 adults is infected, one in 40 in sub-Saharan Africa, and as high as one in three in some African countries. Globally, three of every five adults living with HIV are men, but by the year 2000 the gap between the sexes will have narrowed. As infections increase in women, so does mother to child transmission, and it is now estimated that more than 1.5 million children have been infected since the beginning of the pandemic.

The WHO estimates a cumulative total of 30–40 million people infected by the year 2000. There is now great concern that the epicentre of this disaster is moving away from Africa towards Asia. By 2000, 95% of all infections, as compared to the current 80%, will be amongst those in developing countries. By the end of the century, nearly two million people a year will die of AIDS.

As with STDs, more local and accurate data are available from seroprevalence studies performed over time in various groups and countries (Fig 3–5). High as the levels are in prostitutes generally, in the Pumyana area of Nairobi, where there are large numbers of very young prostitutes, sometimes as young as 13 years of age, the seroprevalence level amongst them reaches 90%. Women attending antenatal clinics in some African countries have levels of 30–35%.

Morbidity

The demographic, economic and social impact of AIDS is far reaching, with considerable effects on individuals, families and countries. At a family level, WHO estimates that up to 15 million uninfected children in Africa will have lost their mothers to AIDS by the end of the century. AIDS threatens the capacity of households to function as an economic unit, and disrupts and even dissolves the social fabric of family structures. This disruption was brought home to me when I saw large numbers of homeless street children in Mwanza, Tanzania’s second largest town. One, or sometimes both, of their parents had died, and the living parent or grandparents were unable to afford to look after them. They would either be sent on to the streets to beg or engage in prostitution or be thrown out on to the streets completely, to find shelter where they could or in one of the special street children projects. Traditional family structures and extended families had clearly broken down under the strain of HIV and sadly, since they engage in prostitution, the children themselves have high levels of HIV and STD infections, further exacerbating the problem.

Population growth and death rates will be increasingly affected. We are already witnessing a marked reduction in life expectancy due to AIDS in most developing countries. Another major issue and burden of AIDS, which must have a considerable impact on a
country's economy, is that young, highly productive adults die at the peak of their output. Thus, not only does AIDS affect individuals and their family structures, but also industry, agriculture and whole economies.

**Interrelationship between HIV and STDs**

A number of factors are associated with the spread of HIV and other STDs:

- demographic/partner change
- poverty, urbanisation and migration
- social unrest and war
- lack of diagnostic and treatment facilities.

The risk of acquiring a sexually transmitted infection is a function of the number of infected sexual partners to which an individual is exposed, the extent of this exposure, and the level of infectiousness of each infected partner. Young age is an important determinant of HIV and other STD transmission, since young people change sexual partners more frequently than older ones. In most resource-poor countries, the age structure is substantially bottom heavy. The most sexually active age groups therefore represent a much larger proportion of the population than in the industrialised world.

Even within countries there are differences in age and sex structures, and in HIV prevalence rates between urban and rural communities. Urban areas have a larger population aged 20–45 years, and more men than women, than rural communities. This is not altogether surprising since men migrate from rural to urban environments to obtain jobs. Separated from
their wives and families, they are more likely to have intercourse with CSWs. Social unrest and war bring with them a constellation of risk factors such as population and troop migration, rape, and, with the fear of death, more emphasis on today rather than tomorrow or next week.

It is clear that HIV and STDs share the same factors in relation to their spread but, in addition, they potentiate each other. The presence of an STD, particularly genital ulcer disease, can enhance both the acquisition and transmission of HIV by increased shedding of the virus within and from the genital tract. The shared risk factors for the acquisition of HIV and other STDs and their interaction have led people to set up integrated control programmes and condom promotion in the hope of reducing and slowing the spread of both.

The crucial variable in any transmission process is change of sexual partner, but in developing countries socio-economic factors play a vital role in predisposing to certain risk behaviours due to social dislocation, migration and inadequate control facilities. AIDS has added to the economic problems of the developing world, striking countries already severely burdened by economic difficulties and rapid population growth. Sub-Saharan countries experienced a decline in gross domestic product (GDP) before the impact of AIDS, while population growth remained consistently high. There was a progressive slowing of per capita GDP, which turned negative at 2% from 1980–85—before the major impact of AIDS was felt.

**Economic structural adjustment programmes**

Pressures imposed from outside are often meant to be helpful to a country’s development, but can in fact exacerbate the problems. One of these is the economic structural adjustment programmes (SAPs). Such programmes have largely been imposed by the World Bank and International Monetary Fund in an attempt to:

- change the structures of economies, removing weaknesses, and building on strengths. In essence the programmes attempt to increase productivity and exports while reducing domestic demand through a monetary credit squeeze.

It is worth examining briefly the essential characteristics of SAPs as they can have an effect on health. We need to be careful not to blame them for all the economic and social problems of developing countries, most of which were there prior to the world recession. However, the reforms required by SAP can potentiate poor health and hinder medical care. The eight basic elements of SAPs are listed in Table 1.

The indirect effects of SAPs are not hard to imagine. In relation to fuelling the HIV/STD epidemic and potentiating already existing socio-economic problems, these effects are:

| Table 1. The eight basic elements of structural adjustment programmes |
|---------------------------------------------------------------|
| - Concessions to foreign investors                             |
| - Economic and trade liberalisation                           |
| - Stimulation of economic activity                            |
| - Devaluation                                                  |
| - Limitation on consumption                                   |
| - Increases in price of goods and services                    |
| - Tax incentives – personal/consumption                        |
| - Reductions in government spending                           |

- decline in rural subsistence economy
- migration and urbanisation
- development of transportation routes
- reduction in spending on health and social services.

Currency devaluation, concessions to promote foreign investment, and the promotion of exports required as part of an SAP can disrupt rural subsistence economies. The shift from rural subsistence farming to more export-rich economies will result in migration, usually male, from rural to urban settings.

Obviously SAPs are not the sole cause of migration; this took place prior to such programmes, but they have increased it. This movement of men has profound effects on HIV and STD epidemics, with men dislocated from their families sleeping with CSWs, and wives, left behind, dependent on money sent back from their husbands, unable for financial and cultural reasons to negotiate safer sex on their partners’ return. Women are themselves not always static and, with declining rural economies and the difficulty of obtaining jobs in urban centres, can gravitate to prostitution. For example, one million Thai women have moved into the sex industry where seroprevalence levels for HIV are as high as 65% in centres such as Chiang Mai.

Transportation networks developed in the 1980s, often as part of SAPs, tend to support export-led economies. These networks facilitate migration of labour from rural to urban centres, and both generate and perpetuate high-risk occupations and ease and rapidity of movement of infection as well as of goods. For example, long-distance truck drivers are known to have high levels of HIV and STDs, often acquired at truck stops from CSWs. This phenomenon is well reported in Kenya, West Africa and India. Similarly, the levels of HIV and STDs are high around mines and fishing camps.

While SAPs help to potentiate circumstances that could encourage high-risk behaviour, they also decrease resources available to reduce such behaviours and to fund control programmes. In attempts to keep medical services going, the governments in many
developing countries have been forced to introduce fees or user charges, usually with detrimental effects. In Kenya, user charges were introduced for STD clinic services in December 1989\textsuperscript{18}. The effects of these charges were examined in one very large clinic in Nairobi. In men, the mean monthly attendance decreased by 40% when fees were levied, and in the post-user charge period, reached only 64% of the pre-charge level. In women, the reduction following charges was 65%, but in the post-charge period rose 22% above pre-charge levels. Clearly, the introduction of user charges and the resulting decline in consultations/attendances bring with them the potential of increasing untreated HIV and STDs and perpetuating their transmission. Similar decreases in health care utilisation following the introduction of charges have been reported in Mozambique, Zaire, Ghana and Zimbabwe.

The indirect effects of SAPs are well summarised by Angela Wakhweya in a leader in the British Medical Journal in July 1995\textsuperscript{19}:

‘Whatever paltry financial gains countries achieve with or without adjustments continue to be inadequately invested in education, transport, telecommunications, and industrialisation, the keys to development. Instead they are ploughed back into debt repayments rather than into the social sector where the main recipients would be women and children.’

We are seeing a cycle of debt and poverty, created and added to by debt repayment.

The solutions

Two approaches to these problems need to be put into place in tandem. The first, and in many ways easier, is the \textit{programme-based approach} which attempts to deliver an integrated system for prevention and treatment. The second is more complex, and relates to the \textit{infra-structural issues} of poverty, social dislocation, the powerlessness of women, etc.

Models for control programmes will vary both between developed and developing countries and within countries. However, two basic aims are common to all programmes:

1. To prevent the development of infections, their complications and sequelae.
2. To interrupt and reduce transmission.

These aims can be achieved or attempted through the two approaches of primary and secondary prevention (Table 2).

\textbf{Primary prevention}

Clearly, it is best to avoid infection in the first place:

\textit{Principiis obsta; sero medicina paratur. Cum mala per longas convaluerre mons.}

(Stop it at the start; it’s late for medicine to be prepared when disease has grown through long delays.)

Ovid

The advent of AIDS has had a major influence on increasing the awareness of the need for health education and on the public acceptance of explicit messages and images. Programmes to market and encourage the use of condoms have been at the heart of many control programmes; they are particularly useful since they reduce acquisition and transmission of both traditional HIV and STD infection. In Africa and Thailand, there has been encouraging evidence that increased condom use has been accepted by high-risk groups such as CSWs and their clients, and that this has altered levels of infection\textsuperscript{20,21}.

Social, cultural and economic issues also need to be addressed. Often women are so poor and disempowered that they have sex on a commercial basis against their will and are unable effectively to negotiate the use of condoms by clients. This was brought home to me vividly in Nairobi where I saw young prostitutes having sexual intercourse at a price of 50p with the use of a condom, but with tremendous pressure from clients not to use condoms, when the price would be 80p. Women need to be taught skills that help them negotiate safer sex with clients and regular partners. This is particularly difficult with the latter since husbands and regular partners can see such negotiation as a reflection of themselves, at the same time as suggesting that the woman has herself had multiple partners.

The recognition of the substantial shift in cultural attitudes that are still necessary to establish wider condom use and safe sex has led research workers to explore the use of vaginal virucides and female condoms. Such agents, if effective, would allow women more control. The crucial issues in all this are the role of women in society and the major cultural barriers that exist allowing them little control over their destiny. Raising the status of women in the developing world will be a crucial factor in the control of HIV and STDs, and can be achieved only through equality in the fields of education and employment.

\begin{table}
\centering
\begin{tabular}{|l|}
\hline
\textbf{Table 2. Strategy for control of HIV and sexually transmitted diseases.}  \\
\hline
\textbf{Primary prevention} &  \\
\hline
\hspace{1em} Health education &  \\
\hspace{1em} Provision of condoms &  \\
\hspace{1em} Social, cultural and economic interventions &  \\
\hline
\textbf{Secondary prevention} &  \\
\hline
\hspace{1em} Promotion of health care-seeking behaviour &  \\
\hspace{1em} Case management &  \\
\hspace{1em} Early detection and treatment of symptomatic/asymptomatic infections &  \\
\hline
\end{tabular}
\end{table}
Even though there are considerable cultural barriers to overcome to allow women to protect themselves against infection, a number of social interventions could be attempted. Simple changes in rules and structures could often reduce the potential for sexual transmission. For example, in many African countries, women in the armed forces are forbidden to marry and have children. Apart from its discriminatory nature, this forces the women into non-permanent partnerships, with the inherent risk of HIV and STDs. The rescinding of this rule would be an effective HIV/STD control strategy. A second example is border controls. In many countries, for example between South Africa and Zimbabwe, border points, in this instance the Bite Bridge, are closed from 10 pm to 6 am. A large number of male and female traders and truck drivers have to wait at such points until they open, and have an enforced leisure time during which sexual activity and partner change will inevitably occur. Why not open the border points for the whole 24 hours to keep traffic moving? A third example is from Tanzania, where I was made aware of the potential for the transmission of infection on the ferries crossing Lake Victoria at night. Apparently, the level of alcohol consumption, prostitution and sexual activity during these night crossings is substantial – never has the phrase ‘rocking the boat’ been more aptly used. Could such activity be reduced by changing to daytime crossings?

These are only a few examples, and we could all think of more, where some lateral thinking and the lightest of social engineering could reduce the potential for sexual transmission.

Secondary prevention

It is self evident that providing screening and diagnostic services, however good and client friendly, are of no use within a control programme unless used. An essential part of a health education programme is to point out the symptoms associated with a possible STD but also to reinforce an understanding that many diseases are asymptomatic, particularly in women. This knowledge and awareness will encourage more appropriate uptake of treatment and screening services by those with infection.

Models of case management used in resource-rich countries are usually inappropriate for implementation in developing countries where health care is provided through a whole array of services and individuals, usually not medically qualified, complemented by pharmacists, traditional healers, quacks and street vendors.

A specialist-based approach, often in urban centres with laboratory support, is not appropriate or cost-effective. The WHO has placed increasing emphasis on integrated systems, especially at rural primary health care level, using a syndromic approach for patient management. A very recent, important and exciting study from Tanzania has demonstrated the positive effect on HIV incidence of an integrated STD programme in rural communities. This randomised controlled trial showed that improved STD care, integrated at primary care level, lowered HIV incidence by 42% over the two-year period of the study. The results confirm the effects of STDs on HIV acquisition and transmission, and that the integrated non-specialist and syndromic approach can be very effective.

The syndromic approach uses algorithms based upon commonly presenting signs and symptoms where laboratory support may or may not be present, for example, genital ulcer, urethral and vaginal discharge. Since an exact diagnosis may not be made, more than one therapy may be used to cover the most probable diagnosis or diagnoses.

It has to be recognised that the majority of infections in women are asymptomatic and will not therefore be identified by use of an algorithm. Thus, active case finding, screening and partner notification are vitally important in an STD control programme aimed at women. It also presents the challenge of developing diagnostic tests that avoid genital examination and can be used for wide-scale screening. An example of this is the use of urine or saliva, which would also be useful in screening large groups of both men and women in the population.

I have indicated that the control of HIV and STDs requires the traditional medical and educational response, but also that there are considerable sociological and economic constraints on implementation that need to be addressed. I have mentioned in particular the problems of women in many societies, and given examples of how some of these problems and barriers to avoiding exposure to infection could be tackled. This wider perspective is outside the traditional approaches to development, particularly in relation to health. Elizabeth Reid, of the United Nations Development Programme, has identified part of the problem:

'A technological resource base has been developed – condoms, information, drugs, test kits, etc – but even if the problems associated with accessibility and affordability of these technologies were able to be overcome, much more is needed to protect people from HIV infection. The missing factors include areas into which development has not yet ventured: male sexuality, discourse taboos, the abuse of women, the forces of traditional patriarchy, individualism, moral corruption and others. There is no tradition to guide the development practitioner in such areas, yet this is where HIV is leading development."

In summary, in order to design control programmes in the developing world, a multifaceted approach is required which addresses socio-economic and gender issues, as well as medical issues.
Developed countries have a responsibility to offer advice, to help to develop appropriate models of care, research and ethical standards, and also to adopt a humane and tolerant approach to the infected and ill. These issues are covered more fully elsewhere.

We have responsibilities to the developing world and need to set rigorous standards when working with others. The first responsibility is suitability, which means that programmes of aid, research and development of health care systems must be relevant to the needs of the local or country population. Failure to develop suitable programmes is the fault of both donors and their consultants but also of the host countries. We have a responsibility to emphasise repeatedly the need for suitable approaches that address the real needs of a country and its population.

The second issue is sustainability. Often, but fortunately now less so, foreign consultants and donors will design and implement expensive programmes. Once aid is withdrawn or tailed off, the host country cannot afford the programmes or make them work since they are not appropriate and are too costly. This can largely be avoided by the formation of true and equal partnerships between the donor and recipient where the programmes are jointly developed. The donor should facilitate, not dictate.

Thirdly, training. Cost and appropriateness are both important elements in sustainability, as is the need for the training of the country’s nationals in skills that will allow them to continue to run programmes of care and research once the ex-patriot workers are withdrawn.

Suitability, sustainability and training also relate to the research carried out by ex-patriot workers in conjunction with local nationals. We must avoid using people as guinea-pigs and carrying out research not relevant and useful to the needs of the country or community.

The ex-patriot research community and funding agencies have a responsibility to apply the same ethical standards to their research work, regardless of whether it is carried out at home or abroad. They also have the responsibility to train local research workers who will adhere to high ethical principles and increasingly design their own studies.

A further ethical issue that needs to be addressed urgently arises from the need for therapeutic and potential vaccine trials. It is now clear that putative vaccines for HIV will best be tested in countries with high levels of infection. It is also absolutely clear, though, that if a vaccine is found to be effective, countries whose annual per capita health budget is $4–6 could not possibly afford the vaccine for their population. The developed world is using such countries to prove the vaccine’s efficacy, but potentially not making the benefits available to those who participated in the trials and to others at risk.

Do such countries and communities have an ethical and moral right to receive the effective intervention at a cost they can afford? Should they insist that a vaccine or drug is made freely available for a set time, say five years after efficacy is proven, and do we, the developed world, recognise that part of our debt to the developing world is to subsidise a vaccine, AZT or whatever other agent? We have a long way to go on these difficult issues, but the overriding principle that must be adhered to is not to exploit the developing countries, but to provide them with the full benefits of scientific discoveries, tested and developed there.

The worldwide HIV and STD epidemic will require both basic and complex solutions. Essential to these solutions is the need to create a paradigm no longer based on a medical construct, but which takes into account all the elements that create and drive such epidemics. The effective control of the HIV and STD epidemic requires broad approaches that, in addition to biomedical interventions, address and understand the social, cultural, economic and political dimensions of this major health crisis. We in Britain are well placed – and have a responsibility – to help to generate and foster a wider understanding, and to offer financial aid and our undoubted expertise in these areas.

References

1. Robb-Smith AHT. The Quarterly Centenary of The Luslian Lecture. JR Coll Physicians London 1983;17:74–8.
2. Over M, Piot P. HIV and sexually transmitted diseases. In: Jamison DT, Mosley WH, Measham AR, Bobadilla JL (eds). Disease control priorities in developing countries. A World Bank book. Oxford: Oxford University Press, 1993: Ch 20: 565–588.
3. World Bank. Investing in Health. World Development Report 1993. New York: Oxford University Press, 1993.
4. World Health Organisation. An overview of selected curable sexually transmitted diseases. Geneva: WHO Global Program on AIDS/STD, 1995.
5. Brunham RC, Embree JE. Sexually transmitted diseases: current and future dimensions of the problem in the Third World. In: Germain A, Holmes KK, Piot P, Wasserheit J (eds). Reproductive tract infections. New York: Plenum Press, 1992: 35–59.
6. De Schryver AF, Meheus A. Epidemiology of sexually transmitted diseases: the global picture. Bull WHO 1990;68:639–54.
7. Laga M, Nsanze H, Brunham RC, Maitha G, et al. Epidemiology of ophthalmia neonatorum in Kenya. Lancet 1986;1:1145–8.
8. Plummer FA, Laga M, Brunham RC, Piot P, et al. Postpartum upper genital tract infections in Nairobi, Kenya: epidemiology, aetiology and risk factors. J Infect Dis 1987;156:92–8.
9. Elliott B, Brunham RC, Laga M, Ndinya-achola JO, et al. Maternal gonococcal infection as a preventable risk factor for low birth weight. J Infect Dis 1990;161:531–6.
10. Temmerman M, Plummer F, Mirza N, Fussahel H, et al. Infection with HIV as a risk factor for adverse obstetrical outcome. AIDS 1990;4:1087–93.
11. UNAIDS and WHO. The HIV/AIDS situation in mid 1996. Global and regional highlights. UNAIDS Fact Sheet, July 1996.
12. Kreiss J, Carael M, Meheus A. Role of sexually transmitted diseases in transmitting human immunodeficiency virus. Genitourinary Med 1988;64:1–2.
13. Laga M, Nzila N, Goehm J. The inter-relationship of sexually transmitted diseases and HIV infection: implications for the...
control of both epidemics in Africa. *AIDS* 1991;5(Suppl): S55-63.

14 Wasserheit JN. Epidemiological synergy inter-relationship between human immunodeficiency virus infection and other sexually transmitted diseases. *Sex Trans Dis* 1992;19:61–77.

15 Ainsworth M, Over MA. The economic impact of AIDS on Africa. In: Essex M, Nabout S, Kanki PJ, Kalengayi MR (eds). *AIDS in Africa*. New York: Raven Press, 1994:559–88.

16 Whiteside A. The economics of Africa and HIV/AIDS. What needs to be done. Paper plenary session, IX International Conference on AIDS and STDs in Africa, Kampala, Uganda, December 1995.

17 Lurie P, Hintzen P, Lowe RA. Socio-economic obstacles to HIV prevention and treatment in developing countries. The roles of the International Monetary Fund and World Bank. *AIDS* 1995;9:539–46.

18 Moses S, Manji F, Bradley JE, Nagelkerke NJD, et al. Impact of user fees on attendance at a referral centre for sexually transmitted diseases in Kenya. *Lancet* 1992;340:463–6.

19 Walkwuya A. Structural adjustment and health: consider the consequences for the least empowered. *Br Med J* 1995;311:71–2.

20 Laga M, Alary M, Nzila N, Mamoka AT, et al. Condom promotion, sexually transmitted diseases treatment, and declining incidence of HIV-1 infection in female Zairian sex workers. *Lancet* 1995;345:246–8.

21 Hanenberg RS, Rojanapithayakorn W, Kunasol P, Sokal DC. Impact of Thailand’s HIV control programme as indicated by the decline of sexually transmitted diseases. *Lancet* 1994;344:243–5.

22 World Health Organisation. *Management of patients with sexually transmitted diseases*. Report of a WHO Steering Group, 1991. WHO Technical Report Series 810. Geneva: WHO.

23 Grosskurth H, Moshf F, Todd J, Mwijaruhi E, et al. Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomised control trial. *Lancet* 1995;346:530–6.

24 Reid E. Development practice and the HIV epidemic. United Nations Development Programme, May 1995.

25 Adler MW. HIV – the other dimension. *Lancet* 1997;344:498–500.

Address for correspondence: Professor M W Adler, Department of Sexually Transmitted Diseases, University College London Medical School, Mortimer Market Centre, off Capper Street, London WC1E 6AU.