

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(09\)60321-4/fulltext?_eventId=login](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)60321-4/fulltext?_eventId=login)

Viewpoint

The Lancet, Early Online Publication, 20 March 2009
doi:10.1016/S0140-6736(09)60321-4

AIDS: lessons learnt and myths dispelled

Prof [Peter Piot](#) MD ^{a b}, Prof [Michel Kazatchkine](#) MD ^c, [Mark Dybul](#) MD ^e, [Julian Lob-Levyt](#) MB ^d

Nearly 30 years into the AIDS epidemic, we are able to assess our progress in tackling the disease with both increased knowledge and the benefit of hindsight. This Viewpoint examines what we—the international community—got right, what we got wrong, and why we need to urgently dispel several emerging myths about the epidemic and the global response to it.

When HIV was emerging in the early 1980s, we clearly underestimated the global effect that the disease would have, and that in only a few decades, tens of millions of people worldwide would become infected. The epidemic nowadays is the result of what 30 years ago was an unpredictable—but tremendously potent—combination of intimate personal behaviours (notably, unprotected sex and needle sharing) and socioeconomic factors (including poverty, gender inequity, social exclusion, and migration) that have affected nearly every country worldwide.

We also underestimated the extent to which stigma and discrimination—against people living with HIV and those most vulnerable to it—would remain formidable obstacles to tackling AIDS. Although the introduction of antiretroviral treatment in developed countries 12 years ago and its dissemination to developing countries in

recent years has largely changed the perception that AIDS is a so-called death sentence, people living with HIV/AIDS in many countries continue to experience ostracism, violence, eviction, loss of employment, and restrictions on their ability to travel. Stigma and fear of discrimination still prevent many people from accessing crucial prevention and treatment services, including HIV testing. Roughly 60 countries worldwide continue to deny or restrict entry to people living with HIV/AIDS, showing how differently HIV infection is perceived and treated compared with other diseases.

Notwithstanding these challenges, we can also say that, after years of inadequate action, we underestimated the sense of urgency and solidarity that would eventually develop in the global AIDS movement, leading to an unusual convergence of political will, money, and science. Since the UN General Assembly Special Session on AIDS in 2001, the international community has substantially increased resources available for AIDS by creating the Global Fund to Fight AIDS, Tuberculosis and Malaria. The USA has launched the US President's Emergency Plan for AIDS Relief (PEPFAR). As a result, more than 3 million people have now gained access to antiretroviral treatment, which was unimaginable only 5 years ago. People living with and affected by HIV, non-governmental organisations, civil society groups, and the private sector are more engaged in the response than ever before. However, in an unstable global political and economic environment, we will all have to work even harder than previously to ensure that this momentum is expanded and sustained.¹

Some aspects of HIV/AIDS were also overestimated in the early years of the epidemic—notably, the pace with which HIV would spread in regions other than sub-Saharan Africa. For example, in the early 1990s, many were concerned that, left unchecked, HIV in Asia would spread quickly outside concentrated epidemics of sex workers, men who have sex with men, and injecting drug users, and that the disease would take on the proportions of the devastating generalised

epidemics occurring in southern Africa.

Fortunately, this scenario has not yet happened, other than in Papua New Guinea, which now has a serious AIDS epidemic. Nevertheless, the Asian epidemic is showing its own worrying trends. A growing proportion of people with HIV in the region are women—notably married women. In Vietnam, women now account for a third of people infected.² At the same time, HIV prevalence in men who have sex with men is growing across Asia—eg, the proportion of men who have sex with men in Bangkok who are living with HIV increased from 17% to 28% between 2003 and 2005.³ Because the continent of Asia has a very large population—more than 2.5 million people are living with HIV/AIDS in India alone—it will continue to demand substantial resources and intensive efforts to improve HIV prevention strategies and provide treatment to people who need it.

Meanwhile, our ability to estimate the number of people living with HIV/AIDS has become increasingly advanced. Estimates from UNAIDS/WHO are based on all relevant data available, including surveys of pregnant women attending antenatal clinics, population-based surveys, sentinel surveillance in populations at increased risk of HIV infection, case reporting, and registration systems. Different combinations of these approaches, and the consensus reached by leading experts nationally and internationally, are producing both improved data from country surveillance and steady advances in modelling methods. The overall result is increasingly accurate estimates.

Despite the remarkable innovations and successes of antiretroviral treatment, we have also overestimated our capacity to devise technological solutions to prevent HIV. Notwithstanding the optimistic projections of the US Health and Human Services Secretary Margaret Heckler in 1984, that an AIDS vaccine would be ready for testing in about 2 years, we still seem many years away from either a vaccine or

a microbicide to protect against HIV transmission, especially after a recent series of disappointing trial results.^{4, 5} Nevertheless, much has been learned about how HIV enters and acts within the body, and continued investments in new prevention technology remain a crucial part of the AIDS research agenda. Encouragingly, in the past 2 years, studies have shown that male circumcision reduces HIV infection in men by up to 60%,⁶ although it does not reduce transmission from men to women or between men.

One of the most common myths is that HIV prevention is not working. However, much evidence suggests that, in several countries, prevention programmes are effective. Between 2005 and 2007, coverage of services to prevent mother-to-child transmission of HIV increased from 14% to 33%.⁷ As a result, in 2007, we noted for the first time a substantial decrease in the number of children born with HIV.

Prevention is, of course, about not only technology, but also behaviour. In many countries on several continents, changes in sexual behaviour (such as waiting longer to become sexually active, having fewer partners, and increased condom use) have been followed by reductions in the number of new HIV infections, providing evidence that efforts to change behaviour can and do work.⁸

However, sustaining behaviour change in the long term remains a major challenge. For example, the number of new HIV diagnoses in men who have sex with men doubled in Germany between 2002 and 2006, and increased by more than three-quarters in Switzerland.²

These data could be attributable to complacency about AIDS and the sense that a treatable disease is somehow less threatening than are other diseases, and to a decrease in HIV prevention efforts in western Europe. Some developing countries that have previously had much success with HIV prevention, such as Uganda, have also had increases

in rates of HIV transmission.²

Another major challenge is that, nearly 30 years into the epidemic, only about half of countries have national HIV prevention targets, whereas nearly 90% have targets for AIDS treatment. Furthermore, when prevention programmes do exist, they are often under-resourced and do not have the quality and scale that are needed to have a real effect in communities. They need to be better targeted to where the epidemic is, both in terms of populations at risk and geographic areas. Much has been published about the need for precise targeting of HIV prevention, especially in concentrated epidemics. But even saturation coverage of vulnerable groups will have little lasting effect without concerted and concrete efforts to change social standards and tackle social factors of the epidemic, such as homophobia and the low status of women in many societies. Programmes also need to be designed and managed more efficiently, including increased use of skills and practices from the business sector.^{9, 10}

An increasingly recurrent myth is that one solution, or a so-called silver bullet, will comprehensively prevent HIV transmission. Elimination of concurrent partnerships, circumcision of all men, focusing of prevention efforts on sex workers, universal HIV testing, and provision of antiretroviral therapy as soon as possible after infection, have all received attention as potential solutions for prevention of HIV transmission. Scaling up strategies for harm reduction, such as methadone substitution and the provision of clean needles for injecting drug users, remains neglected in many countries in which injection drug use is a major means of HIV transmission. Although these strategies are all important, no approach will be enough on its own, and the promotion of one solution is, in our view, irresponsible. If we have learned one lesson in the past 27 years, it is that effective HIV prevention depends on customising the right mix of interventions for every context and ensuring the necessary coverage

of them.⁸ If we are to successfully increase access to HIV prevention, we have to be prepared to come to terms with complexity, effectively use all the methods that are available, include affected communities, engage relevant business expertise, and foster leadership to help change harmful social norms.

Another prevailing misconception is that heterosexual transmission of HIV is uncommon outside Africa. Generalised epidemics are occurring in Haiti and Papua New Guinea, whereas heterosexual transmission drives the epidemic between sex workers, their partners, clients, and clients' partners in Asia and elsewhere. HIV infections in women are rising worldwide. The main method of transmission in Thailand is no longer between sex workers and their clients or between injecting drug users: it is between married couples.³ Furthermore, AIDS remains the leading cause of death in African-American women in the USA.¹¹ To characterise all African epidemics as exclusively heterosexual is also incorrect. Methods of transmission and affected groups are many and varied. In Kenya, for example, HIV infections in men who have sex with men and injecting drug users are an increasing cause for concern.¹²

Although such observations neither indicate nor predict extensive or generalised HIV epidemic spread, they do draw attention to the fact that heterosexual transmission of HIV occurs in a wide range of settings. They also show that the HIV epidemic is constantly evolving, and continually surprising.

As we approach the fourth decade of the AIDS epidemic, new global challenges are competing for the attention of political leaders and donors at the same time as they face the present financial crisis. Alarming, a myth has begun to emerge that too much money is spent on AIDS. But AIDS remains the leading cause of death in Africa and the sixth highest cause of mortality worldwide.¹³ It is fitting that investment in fighting AIDS has finally begun to increase substantially,

rising from a paltry US\$250 million in 1996 to around \$14 billion in 2008.¹⁴ Even so, UNAIDS estimates that available resources at present fall well short of what will be needed to reach coverage targets for 2010.¹⁴ Moreover, mobilisation around AIDS has increased available resources for tuberculosis and malaria (largely through the Global Fund) to unprecedented amounts and generally contributed to an increase in global funding for health.

Increased resources are beginning to have an effect, as are antiretroviral treatment programmes, which have been established in developing countries for less than 5 years. Among the first was in Malawi, which recorded a 44% reduction in mortality in workers at the national electricity company—one of the country's largest employers—after the roll-out of antiretroviral treatment.¹⁵ In Botswana, where HIV prevalence has reached 30%, mortality has begun to fall in the age groups most affected by AIDS since the introduction of antiretroviral treatment.¹⁶

Another major myth that needs to be dispelled is that investments in AIDS are being made at the expense of health systems that are chronically underfunded. Although AIDS has exposed weaknesses in health systems, funds for this disease are making a major contribution to the strengthening of health systems.

The Global Fund and PEPFAR are now among the biggest investors in health systems, joining other funders such as the GAVI Alliance. Although drugs and other commodities account for nearly half of Global Fund spending ([figure 1](#)), 35% of the Fund's financing for AIDS, tuberculosis, and malaria contributes directly to supporting human resources, infrastructure and equipment, and monitoring and evaluation: all key components of health systems. Overall, the Fund has committed more than \$4 billion in these three areas. From 2004 to 2009, on the basis of conservative estimates, PEPFAR will commit more than \$4 billion to health systems, including more than \$1 billion

in 2009 alone (figure 2).

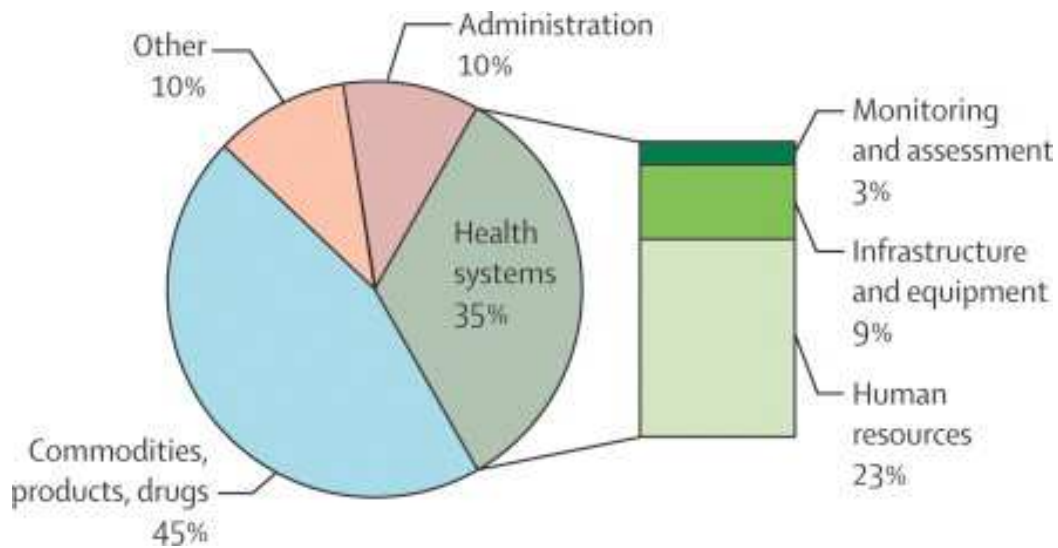


Figure 1

Direct funding of health systems through Global Fund grants

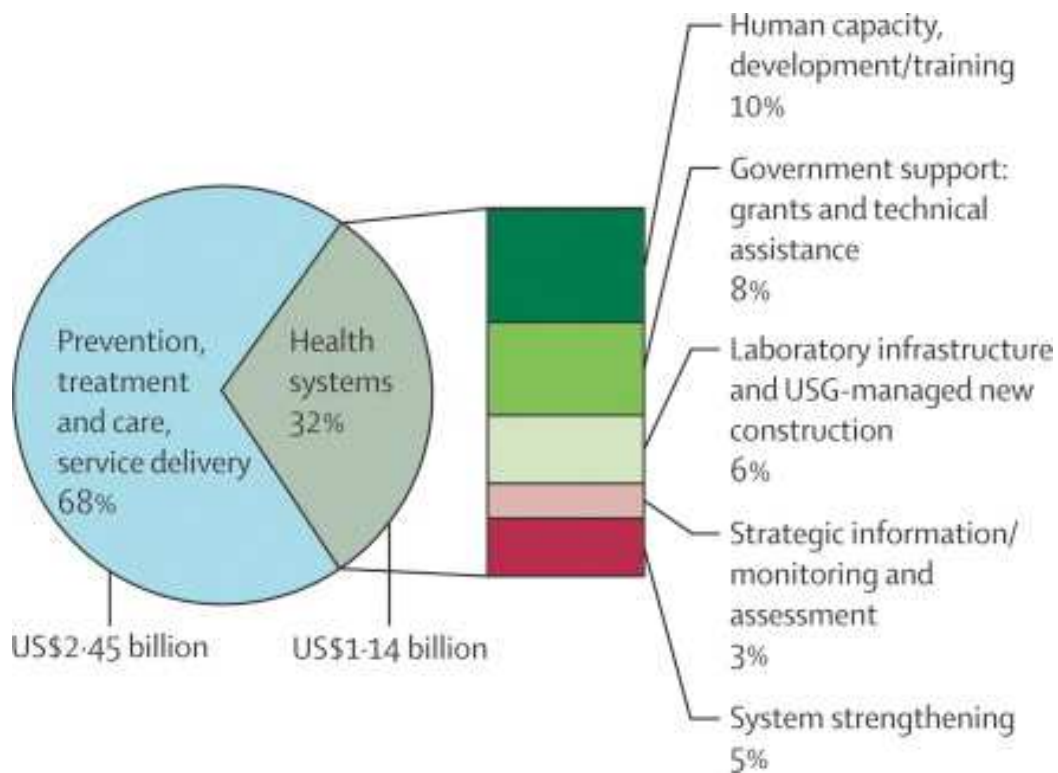


Figure 2

PEPFAR planned investments in health-systems-related programmes and bilateral programme support in 15 countries in 2009

The results of these investments are clearly noticeable on the ground, where AIDS resources are contributing to the refurbishment of health centres, the hiring of new health workers, and the establishment of local schemes for national health insurance. In Ethiopia, resources from the Global Fund and PEPFAR are strengthening the health system and enabling the rapid scale-up of diagnostic and treatment services for AIDS and tuberculosis.

AIDS programmes have other benefits for health systems. In many African countries, AIDS services and treatment keep health workers alive, healthy, and able to work. A study in Rwanda,¹⁷ for example, showed that within 2 months of starting to provide antiretroviral treatment in PEPFAR-supported sites, the average number of new admissions at seven sites dropped by 21%, freeing up health workers and enabling valuable resources to be dedicated to other health-care needs. AIDS resources have greatly strengthened overall laboratory capacity and systems for distribution of drugs. In Nicaragua, new equipment financed by the Global Fund for the National Reference Laboratory enables not only processing of HIV tests, but also processing and storage of blood samples taken for other purposes. A further myth that has emerged suggests that strengthening health services alone will solve the world's health problems, including AIDS. Improvements to health infrastructure and measures to tackle the human resources crisis for health are long overdue in many countries and deserve much support, especially since they will be essential for the further roll-out of antiretroviral treatment. At the same time, what might have happened to the 4 million people on antiretroviral therapy in developing countries if we had waited until health services had been strengthened before launching HIV treatment programmes is a sobering thought.

Improved health systems alone are not enough to end the AIDS epidemic. We have known since the early 1990s that, although the health sector has a major role in provision of HIV treatment, it cannot

and does not meet the full range of needs. Whereas well functioning health and community services will be key to provision of antiretroviral therapy for decades to come—as well as services for the prevention of mother-to-child HIV transmission, blood safety, and male circumcision—most other HIV prevention activities are happening largely outside the health sector. This tenet is especially true in the case of programmes that reach populations at high risk and at the margins of society, youth, and injecting drug users, and programmes promoting social change.

AIDS funding is often used to lend support to the establishment of quality sex-education programmes in schools, efforts to eliminate violence against women, and care for orphans. The benefits of such activities extend far beyond an effective AIDS response.

A last myth is that AIDS has somehow been solved. However, we have only just begun to see a return on the investments of the past decade in the form of falling rates and fewer deaths, indicating a new phase in the AIDS response; it by no means suggests that the problem is anywhere near solved. This new phase is characterised by a new set of challenges that could well prove more difficult than any that we have encountered so far.

We need to recognise that AIDS is a long-term event. Tackling it is complex, but our successes so far indicate what is possible. In the future, we should pay far greater attention to epidemiological trends and to the social factors driving them. We have to identify now how to finance a sustained response to AIDS for another several decades, and develop long-lasting links with broader efforts to strengthen health systems and health workforces as well as other development efforts, such as in education and food security. At the same time we have to continue to invest in research and development to produce improved diagnostic tests and less toxic and more effective drugs, in addition to microbicides and vaccines. A serious and concerted effort is also

needed to tackle stigma and discrimination, ensuring that people most at risk actually receive the services that they need. Only when we have met all these aims will we be anywhere close to the point at which we can truthfully say that the fight against AIDS is being won.

Contributors

PP and MK jointly drafted the article, MD provided significant editorial input to the draft, and JL-L provided editorial input to the draft.

Conflict of interest statement

We declare that we have no conflict of interest.

Acknowledgments

We thank Sarah Russell, Ian Grubb, and Rebecca Affolder for their assistance in the preparation of this article.

References

- 1 Piot P, Russell S, Larson H. Good politics, bad politics: the experience of AIDS. *Am J Publ Health* 2007; **97**: 1934-1936. [PubMed](#)
- 2 UNAIDS/WHO. AIDS epidemic update, 2007. Geneva: UNAIDS/WHO, 2007.
- 3 Commission on AIDS in Asia. Redefining AIDS in Asia: crafting an effective response. New Delhi: Oxford University Press, 2008.
- 4 Buchbinder SP, Mehrotra DV, Duerr A, et al for the Step Study Protocol Team. Efficacy assessment of a cell-mediated immunity HIV-1 vaccine (the Step Study): a double-blind, randomised, placebo-controlled, test-of-concept trial. *Lancet* 2008; **372**: 1881-1893. [Summary](#) | [Full Text](#) | [PDF\(278KB\)](#) | [CrossRef](#) | [PubMed](#)
- 5 McElrath MJ, De Rosa SC, Moodie Z, et al for the Step Study Protocol Team. HIV-1 vaccine-induced immunity in the test-of-concept Step Study: a case-cohort analysis. *Lancet* 2008; **372**: 1894-1905. [Summary](#) | [Full Text](#) | [PDF\(519KB\)](#) | [CrossRef](#) | [PubMed](#)
- 6 Auvert B, Taljaard D, Lagarde E, Sobngwi-Tambekou J, Sitta R, Puren A. Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 Trial. *PLoS Med* 2005; **2**: e298. [CrossRef](#) | [PubMed](#)

[7](#) WHO/UNAIDS. Towards universal access scaling up priority HIV/AIDS interventions in the health sector: progress report.

<http://www.who.int/hiv/pub/2008progressreport/en/index.html>.

(accessed Feb 5, 2009).

[8](#) Merson MH, O'Malley J, Serwadda D, Apisuk C. The history and challenge of HIV prevention. *Lancet* 2008; **372**: 475-488. [Summary](#) | [Full Text](#) | [PDF\(793KB\)](#) | [CrossRef](#) | [PubMed](#)

[9](#) Piot P, Bartos M, Larson H, Zewdie D, Mane P. Coming to terms with complexity: a call to action for HIV prevention. *Lancet* 2008; **372**: 845-859. [Summary](#) | [Full Text](#) | [PDF\(635KB\)](#) | [CrossRef](#) | [PubMed](#)

[10](#) Bertozzi SM, Laga M, Bautista-Arredondo S, Countinho A. Making HIV prevention programs work. *Lancet* 2008; **372**: 831-844. [Summary](#) | [Full Text](#) | [PDF\(383KB\)](#) | [CrossRef](#) | [PubMed](#)

[11](#) US Centers for Disease Control and Prevention. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR Morb Mortal Wkly Rep* 2006; **55**: 1-17. [PubMed](#)

[12](#) Gouws E, White PJ, Stover J, Brown T. Short term transmission estimates of adult HIV incidence by mode of transmission: Kenya and Thailand as examples. *Sex Transm Inf* 2006; **82**: 51-55. [PubMed](#)

[13](#) WHO. The global burden of disease: 2004 update. Geneva: World Health Organization, 2008.

[14](#) UNAIDS. What countries need: investments needed for 2010 targets. Geneva: UNAIDS, 2009.

[15](#) The Global Fund to Fight AIDS, TB and Malaria. Partners in impact: results report. Geneva: The Global Fund to Fight AIDS, TB and Malaria, 2007.

[16](#) Stoneburner R, Montagu D, Pervilhac C, et al. Declines in adult HIV mortality in Botswana, 2003–2005: evidence for an impact of antiretroviral therapy programs. Sixteenth International AIDS Conference, Toronto; 2006 (abstr THLB0507).

[17](#) Price JE, Micomyiza E, Nyeimana V, Tchupo J. Integrating HIV clinical services in primary health care centers in Rwanda: effect on the quantity on non-HIV services delivered. HIV Implementers

Meeting; Kigali, Rwanda; June 17, 2007.

a Institute for Global Health, Imperial College, London, UK

b Bill & Melinda Gates Foundation, Seattle, WA, USA

c The Global Fund to Fight AIDS, Tuberculosis and Malaria, Geneva,
Switzerland

d GAVI Alliance, Geneva, Switzerland

e O'Neill Institute for National and Global Health Law, Georgetown
University Law Center, Washington, DC, USA

Correspondence to: Prof Michel Kazatchkine, The Global Fund to Fight AIDS,
Tuberculosis and Malaria, Chemin de Blandonnet 8, 1214 Vernier, Geneva,
Switzerland

Copyright © 2009 [Elsevier](#) Limited. All rights reserved. The Lancet ® is a registered
trademark of Elsevier Properties S.A. used under licence.

The content on this site is intended for health professionals.