



## The Real Obstacles to Sound Treatment of AIDS in Poor Countries

By Roger Bate and Richard Tren

*Over 42 million people are suffering from HIV/AIDS. According to the Joint United Nations Program on HIV/AIDS (UNAIDS), of the 27 million Africans who are sick, fewer than 150,000 are receiving treatment. The causes of this are myriad, but the lack of political will, infrastructure, trained staff, and more generally lack of wealth are the prime causes of lack of treatment.*

*At the UNAIDS conference in Bangkok beginning July 12, aid and health agencies must continue to promote methods of prevention of HIV/AIDS and focus attention on how treatment can be improved, particularly for the poorest victims. Over two years have been lost in wasted political effort trying to weaken drug patents despite the fact that patents rarely hinder access to drugs. Unless UNAIDS changes its focus to the real causes of lack of treatment, millions more preventable deaths will occur in the coming decade.*

In July, the world's AIDS activists, health professionals, and assorted aid donors and recipients will descend on the Thai capital of Bangkok for the fifteenth UNAIDS conference ([www.unaids.org](http://www.unaids.org)).

At the top of the agenda will be increasing drug access for millions in need. It is debatable whether treating patients with expensive drugs is the best use of donor money or national health budgets, given the cost of treatment, the lack of a cure for the disease, and the relative low cost of prevention. But in this paper we assume that treatment is a sensible allocation of resources and discuss the real and virtual reasons for lack of treatment in the poorest countries of the world.

### HIV-Infection Numbers

UNAIDS estimates that 3 million people died from HIV/AIDS and that 5 million more were

infected with HIV in 2003.<sup>1</sup> UNAIDS also estimates that between 34 and 46 million people live with the disease worldwide, approximately half of whom dwell in Sub-Saharan Africa. Adult prevalence of HIV/AIDS is somewhere between 7.5 and 8.5 percent of the adult population in Sub-Saharan Africa.<sup>2</sup> Sub-Saharan Africa also accounts for the greatest number of deaths in 2003 from HIV/AIDS with around 70 percent of the total.<sup>3</sup>

It is imperative to prevent new HIV infections. Globally, the high-risk groups for AIDS continue to be intravenous drug users, homosexuals, and prostitutes, although in Africa the disease is more widespread among the heterosexual community. However, evidence is growing that iatrogenic infection is far more important than is generally realized—that is, HIV is being transmitted by medical interventions such as blood transfusions and injections, both of which are far more common in developing countries than in the West.

Official figures from India, based on patchy data from sentinel sites, estimate that “high prevalence”

---

Roger Bate ([rbate@aei.org](mailto:rbate@aei.org)) is a visiting fellow at AEI, and Richard Tren is a director of the health advocacy group Africa Fighting Malaria.

(greater than 1 percent) HIV infection exists in only six states. These states, however, contain nearly 30 percent of India's population—292 million. No domestic revenues have yet been spent, and more political will could be committed. But many outside agencies, including the Gates Foundation and the UN Global Fund to Fight AIDS, Tuberculosis, and Malaria (the Global Fund), as well as international and domestic charities, are active in promoting a multi-pronged campaign, similar to that which has had success in Thailand.<sup>4</sup>

On the other hand, few campaigns are, as yet, focusing on what many frustrated AIDS prevention workers see as a major source of infection—unsafe injections. HIV, along with Hepatitis B and C and other blood-borne diseases, is being transmitted by contaminated needles used by poorly trained and equipped personnel, including street dentists. The Global Fund has recognized that these diseases work in synergy as a high pre-existing pathogenic load greatly increasing the risk of HIV infection, but still there is an over-emphasis on the assumption of sexual transmission, which hampers more effectual prevention strategies.<sup>5</sup>

Official data from China show that 70 percent of HIV infection is acquired through intravenous drug use, but researchers there have recently pointed to iatrogenic acquisition of HIV infection—through paid blood donation and the receipt of blood products—as a major contributor to the HIV epidemic. The Chinese vice minister of health gave 30,000 to 50,000 as the official figure of paid blood donors who had become infected with HIV until 2001. This is widely considered an underestimate, and it is known that many of those infected gave the more lucrative plasma over one hundred times. Even if each infected donor had only given blood ten times following seroconversion, 500,000 victims could have acquired HIV from these blood products.<sup>6</sup> As in Africa and southern Asia, injections and infusions are very widely given, often using unsterilized medical equipment. Researchers have estimated that perhaps 20 to 40 percent of HIV infections have been acquired in this way.<sup>7</sup>

Romania recently announced that it had HIV infection under control. Ten thousand people are infected, which is an unusually small number, but the vast majority, perhaps 7,000, are in a small and tragic cohort that is clearly defined. Most are aged twelve to seventeen and were injected with contaminated blood as infants, from 1987 to 1991. In those days of scarce food and vitamins, Romanian doctors gave “micro-transfusions” of blood to

anemic babies. They also used immunoglobulins, made from blood products, for relatively minor illnesses. School nurses reused vaccination needles.<sup>8</sup>

Stories of similar practices are now beginning to emerge. Five Bulgarian nurses and a Palestinian doctor were sentenced to death by firing squad in Libya recently for infecting children under their care in Benghazi Hospital. Four hundred twenty-six children were infected and forty-six died, but Dr. Luc Montagnier, who co-discovered HIV, visited the hospital recently and reported that the poor sterilization and flawed practices responsible for the infections still prevailed.<sup>9</sup>

HIV infection in Russia is largely associated with intravenous drug use, and the rate of infection is rampant—between 1998 and 2002, the number of registered HIV cases jumped twenty-fold to 200,000. The real number, according to the state health agency, is nearer 1 million, 80 percent of them under thirty years of age. Russia's worst-affected city is St. Petersburg, which has 17,000 registered HIV cases, 97 percent of whom are drug users.<sup>10</sup> There is widespread discrimination against HIV-positive people—they have difficulty finding work and even medical care—but there is an incentive for drug users to register, as the government has allowed non-governmental organizations to offer free testing and needle-exchange programs.<sup>11</sup> The situation for homosexuals, however, is very different—they are doubly discriminated against. In each of the past three years, legislation has been proposed to recriminalize homosexuality—the last attempt being killed at committee stage in May 2004. Many Russians blame gay men for the rise in HIV/AIDS and for the disintegration of the traditional family.<sup>12</sup>

Between 1987 and 1991, over 142 million people were tested for HIV—the vast majority without the consent or knowledge of those being tested. At the end of 1995, a quarter of the confirmed cases of HIV in Russia were children infected in medical settings and a third were among homosexual men.<sup>13</sup>

Outside of Africa, HIV/AIDS has so far received little international attention. But this is changing. As the detail above indicates, India, China, and Russia have burgeoning problems, with perhaps 4 million, 2 million, and 1 million cases respectively. And it is quite likely that India has already overtaken South Africa as the country with the most infections (greater than 5 million). Some forecasts show that these countries will have a combined total of 20 million cases by 2010. There is no longer any doubt that HIV/AIDS is a Eurasian, as well as an African, problem.<sup>14</sup>

## AIDS and Economics

HIV/AIDS should not only be seen as a humanitarian disaster, but as an economic one as well. Productivity declines because those sickened and unable to work are in the most economically productive adult age groups. The World Bank estimates that AIDS reduces economic growth by between 0.3 and 1.5 percent annually. However, one World Bank study stresses that these figures underestimate the true economic cost of the pandemic and that over the long run, the economic costs could be much higher.<sup>15</sup>

Given the damage already done by HIV/AIDS to economies, it is desirable to at least try and provide treatment. During the 1990s, treatment for AIDS sufferers developed by government-sponsored research programs and the research-based pharmaceutical industry became increasingly effective. Individuals in wealthy countries on well-monitored and managed anti-retroviral treatment (ARV) programs began leading healthy, productive, and full lives.

As a result, these drugs have greatly increased life expectancy for people living with HIV/AIDS. There has therefore been an understandable desire to roll out delivery of these drugs in Africa. Yet access to these treatments in most parts of Africa is abysmally low. In most countries, with the notable exceptions of Botswana, Uganda, and Senegal, less than 5 percent of the population requiring treatment actually receives it. In most of Africa, approximately 100,000 people out of an estimated 4.4 million that require treatment actually receive it. By comparison, the WHO estimates that as of November 2003, 84 percent of individuals in the Americas requiring treatment receive it.<sup>16</sup>

HIV/AIDS is probably the most politically charged disease of modern times. AIDS activists have run very high-profile campaigns to encourage greater access to drugs for the world's poor. By and large, those campaigns have targeted the research-based pharmaceutical industry that produces the treatment as the major barrier to drug access. Many drug activists accuse these companies of using their intellectual property rights to raise the price of drugs and to keep them out of reach of those that require them. Yet the reality is somewhat different. In this paper we expose some of the other, far more important barriers to drug access and show that not only have the campaigns against drug companies and drug patents been misguided, but they may have done long-term harm to the efforts to control and treat HIV/AIDS.

## Treatment Effectiveness

For people that have access to treatment for AIDS-related illnesses and who receive ARVs, AIDS need not be a death sentence. The advances in treatment since HIV/AIDS cases were first identified in the early 1980s have been remarkable. In Southern Africa, the recommended treatment regimen is known as Highly Active Antiretroviral Therapy (HAART), which is made up of three classes of drugs: two Reverse Transcriptase Inhibitors (one Nucleoside and one Non-nucleoside RTI) and one Protease Inhibitor.

HAART inhibits the replication of HIV and can greatly delay the onset of AIDS. The therapy works to reduce the viral load—the number of particles of HIV in the bloodstream—and to increase the CD4 count—an important measure of the body's immune system.

While treatment is often essential, UNAIDS cautions that it should not be provided to the exclusion of other interventions, such as programs to prevent the transmission of HIV or re-infection with the virus. In addition, UNAIDS stresses the need for good nutrition and the prevention and treatment of opportunistic infections.<sup>17</sup>

## Why Don't People Get Treated?

**Patents.** In recent years, the controversy surrounding access to treatment for patients living with HIV/AIDS, and indeed for patients affected by other diseases, has largely focused on the role of drug companies and drug patents in blocking access to treatment. For instance, Oxfam stated in November 2002 that U.S. insistence on strict intellectual property rules in developing countries has “harmed millions of sick people in poorer countries by blocking poor people's access to cheap life-saving medicines.”<sup>18</sup>

Médecins Sans Frontières (MSF), which provides crucial medical interventions in some of the most troubled and dangerous places on earth (for which it received the 1999 Nobel Peace Prize), has been very vocal on the role that patents play in blocking access to drugs. In a letter to the *British Medical Journal*, MSF's Michael Schull states that “patents restrict access to medicines, and poor patients die every day of diseases against which effective treatments exist.”<sup>19</sup> So strongly held is MSF's view on drug patents that it even went as far as supporting the violent and abusive regime of Robert Mugabe when his Zimbabwean government announced that

it would override drug patents and allow generic HIV/AIDS treatments to be imported.<sup>20</sup>

The argument that drug patents and drug company profits are blocking access to drugs is an appealing and simple one, but the reality is somewhat different. Research into the actual extent of drug patenting of ARV therapy in Africa and of essential drugs in most poor countries shows that drug patents rarely exist.

In the fifty-three countries of Africa, fifteen ARV therapies that are most usually required for treatment were rarely patented. Out of a total possible 795 patents, only 172 (or 21.6 percent) actually exist.<sup>21</sup> In addition, there appears to be little relationship between the degree of drug patenting for ARVs and access to those drugs. If the “patents block access” thesis were correct, one would expect that in countries that have more drug patents, drug access would be reduced and vice versa. Yet no such relationship exists.

ARVs are not the only therapies that are scarcely patented in poor countries. Research shows that few of the World Health Organization’s (WHO) list of essential drugs are patented in Africa and other major developing countries. For sixty-five low- and middle-income countries, patenting for the 319 WHO list of essential drugs is rare. Indeed only seventeen of the drugs are patentable and even then they are very rarely patented. In only 1.4 percent of the cases were drug patents found to exist in markets containing 4 billion people.<sup>22</sup>

Although some drug patents do occur for some drugs in some key countries—such as South Africa, where most ARVs are patented—on the whole they rarely exist and cannot account for lack of access to good treatment in most poor countries. The mistaken belief that ARV drugs are widely patented is not just confined to activist circles but extends even to public announcements from the head of the World Health Organization. At the World Health Assembly in May, Dr. Lee Jong-wook, director-general of the WHO announced: “In March, the Government of Mozambique issued a compulsory license for manufacturing a triple combination of antiretroviral drugs to meet national needs. In doing so they became the first African country to take this important step in implementing the Doha Declaration.”<sup>23</sup> What Dr. Lee, and amazingly the Mozambican government, failed to realize was that the three HIV/AIDS drugs to be compulsorily licensed had never been patented in Mozambique—in other words, there was no point in the move at all. Most ironically, the country promised to pay up to 2 percent royalties to the original patent holders—payments to which they are not

entitled.<sup>24</sup> Given this folly from the Mozambican government, repeated by the director-general of the WHO, it is not surprising that the world’s media consider patents to be *the* issue.<sup>25</sup> Furthermore, the WHO has been pushing Indian generic alternatives to branded drugs. In what is turning into something of a scandal, it quietly withdrew approval for two of these drugs, used quite widely in Africa, without really making a public announcement.<sup>26</sup>

But if drug patents cannot be considered a major barrier to access, other more fundamental reasons must account for the fact that more often than not, critical medical interventions are out of reach for so many of the world’s poor. Among the more fundamental reasons for limited drug access is a lack of health infrastructure, poverty, low political will, taxes and duties, and an intransigent medical bureaucracy. Let us consider these factors in turn.

**Infrastructure and Poverty.** The medical infrastructure, such as clinics and hospitals, as well as sophisticated distribution networks that deliver medicines to dispensing chemists and other outlets (which are taken for granted in rich countries), is often entirely lacking in poor countries. According to the World Bank, African countries spent, on average, \$42 per person per year on health care. Yet this figure is skewed by the richer African countries, such as South Africa, which spends over \$250 per person per year. Zambia for instance, only manages to spend \$18 on health care for each citizen in a year, while Uganda spends only \$10.<sup>27</sup>

The paltry level of health care funding in Africa contrasts with countries such as the United States, which spends around \$4,500 per person per year on health care.<sup>28</sup> It is little wonder that Zambia and Tanzania only have seven and four physicians per 100,000 people respectively when their available budget is so low.<sup>29</sup>

Sanitation and safe water sources are also woefully inadequate in most of Africa. For much of the continent, only half of the population has access to water that is safe and potable and to effective sanitation services. Providing pills to people, especially to children, is dangerous if they cannot swallow those pills with safe, clean water.

Addressing the severe lack of health infrastructure is one of first necessary steps to improving access to medicines. Without this first step, there can be no progress in improving health care in poor countries. Nigeria, for instance, attempted to roll out ARV treatment when it imported cheap generic versions of ARV drugs from India in 2002. The program failed, however, with less

than 10 percent of people requiring treatment actually getting the drugs. The drugs have since expired in warehouses because the sophisticated infrastructure that would deliver those drugs, store them correctly, and ensure that patients who received them adhered to the strict regimens, was absent.<sup>30</sup>

In South Africa, which has the continent's most advanced economy and best medical infrastructure, there is an inability and lack of capacity to spend its HIV/AIDS budget. For various reasons, ZAR 41.7 million (\$6.5 million) of the ZAR 90 million grant for purchasing anti-retroviral medicines in 2003–2004 was unspent. One province, Mpumalanga, failed to spend 66 percent of its budget allocation.<sup>31</sup> Patients in many clinics and hospitals in South Africa routinely die of preventable diseases and very often of poor medical care. Although South Africa has a very competent malaria control program, there are numerous cases of patients dying from complications of malaria because physicians and nursing staff do not provide basic medical care (such as protecting the airway of unconscious patients and examining chest, neurological, and urine output of patients).<sup>32</sup> Much of the problem lies in a lack of supervision of medical staff, which does not augur well for the treatment and care of HIV/AIDS patients.

**Political Will.** To a certain extent, the inadequate health care budgets for most African governments are simply a function of very limited total government budgets. In recent years, most African governments have changed the allocation of funding so that health care receives a larger share of the pie, but this was not always so. Frequent wars in much of Africa meant that resources that could have been allocated to building clinics and preventing disease went toward buying arms and paying soldiers. Even countries that never had civil wars or were not involved in conflicts outside their borders allocated more money to the military than to health care. According to the World Bank, Zambia, a peaceful country, spent an equivalent of 3.7 percent of its GDP on the military, but only 3.3 percent on health care in 1990.<sup>33</sup>

It is difficult to over-estimate the importance of political will in tackling diseases. South Africa showed a great deal of political will to control its malaria epidemic in the late 1990s and did so effectively by using the insecticide DDT—despite international opposition—and by introducing new and expensive drugs.<sup>34</sup> That country, however, has failed to show political will in dealing with its very significant HIV/AIDS problem. For instance, the

South African government has been taken to the constitutional court (the highest court in South Africa) in order to force it to provide ARV therapy to HIV-positive pregnant mothers in order to prevent them from passing HIV on to their children during birth. South Africa's President Mbeki has openly questioned the link between HIV and AIDS, and his views and those of his minister of health have sparked an ongoing acrimonious legal battle between the government and health activists.

Other countries, such as Botswana, Uganda, and Senegal have, in contrast to South Africa and most other African countries, shown leadership and foresight in attempting to deliver adequate medical care and ARV therapy to their citizens. Although Botswana has a far smaller population than South Africa (1.6 million compared with 43 million<sup>35</sup>), it formed partnerships with key stakeholders, such as the drug manufacturer Merck, Harvard University, and the Gates Foundation.

Having a government that is serious about tackling disease and building the partnerships with research institutes and the private sector to ensure that disease control is effective is clearly a crucial prerequisite in poor countries (and indeed rich countries).

**Taxes and Tariffs.**<sup>36</sup> Political will goes far beyond committing funds from the national fisc to develop health infrastructure and providing moral leadership. It requires changes to tax and tariff rules in poor countries that increase the price of drugs to patients. Governments and activists have focused their efforts largely on pressuring the research-based drug companies to lower their drug prices and relinquish their patent rights but have failed to address the obvious state-imposed price barriers of taxes and tariffs.

It is the legitimate choice of African governments to decide what they tax, even though many leaders have not been democratically elected. However, it does seem rather peculiar that they place tariffs, levies, duties, and other taxes on pharmaceuticals, which can save the lives of their citizens. Moreover, numerous studies show that, were diseases like malaria and TB brought under control, the economies of these countries would grow faster. And growth means more revenue for the treasury.

Southern Africa does relatively well compared with the rest of the continent: most countries have no import duties on medicines, although Tanzania does charge a 10-percent import duty, Malawi a 15-percent duty, and South Africa charges 14-percent sales tax on drugs. Each of these countries has a serious problem with AIDS and

malaria, and they could treat thousands more patients with the removal of such duties.

The most odious tariffs and duties are to be found in countries further to the North. The oxymoronicly named, and incredibly corrupt and poor, Democratic Republic of the Congo charges at least 30 percent tax on all drugs crossing its borders and has further taxes adding another 13 percent to the price. Ethiopia, the African country most closely associated with famine and poverty, charges an import duty of 30 percent. Burundi and Egypt charge over 10 percent in port inspection charges, and the former has a slew of other small taxes (clearance and freight duties, bank and currency charges, import margins, and domestic taxes) bringing its total closer to 30 percent aggregate markup. Rwanda charges a massive 9.5 percent just for bank and currency charges.

All in all, these taxes add significantly to the price of drugs that leave warehouses in the wealthy North before they reach those in need. And even where donations are made—in other words, the drug prices are zero—in some cases, notably Egypt, an estimated price is used from which to draw the percentage duty to charge.

The result is that the cheapest prices people actually pay for drugs are sometimes well over double the figures usually quoted in major newspapers. In October 2003, the Clinton Foundation announced that HIV cocktails would be available for \$140 per person per year, and this figure has been widely quoted ever since.<sup>37</sup> In reality, it is unclear whether any drugs have been supplied at this price. The lowest figure is over \$250, and when one adds the taxes, the real amount is well over \$300 in all countries but exceeds \$500 in most.<sup>38</sup>

African nations are not the only ones to blame here. Argentina (21%), Bangladesh (15%), the Dominican Republic (28%), Greece (15%), and Turkey (18%) all charge sales tax on life-saving drug imports, while Brazil, considered to have the best developing country HIV program, charges an 11.7-percent import duty on medicines. Perhaps worst of all is India: with over 3 million HIV cases and only 17,000 people on treatment, it charges at least a 25-percent duty on medicines.

One can only view with deep skepticism the calls for cheaper drugs from poor country governments when they themselves are responsible for increasing the price of drugs through their own tax policies and choose to raise state funds by raising the cost of treatment for patients.

**Bureaucratic Difficulties.** Drug registration procedures around the world have greatly added to the cost of

developing new drugs in recent years. The Tufts Center for the Study of Drug Development estimates that the cost of developing a new innovative drug is \$802 million.<sup>39</sup> An increasing proportion of the cost of drug development is accounted for in clinical trials and the cost of regulation. Complying with the regulations of the Food and Drug Administration (FDA) and the various regulators in Europe and other developed nations, such as Japan, will account for most of the regulatory costs. However, regulators in Africa and other developing countries impose further costs to drug developers. These costs need to be offset against the potential revenue in various poor country markets. While the revenue from drug sales in rich country markets may offset the regulatory costs, this may not be true in poor country markets.

In South Africa, the Medicines Control Council (MCC) is particularly inefficient, which adds greatly to the cost of registering and marketing drugs in the country. Generic versions of drugs that have been registered for use as brand name drugs in South Africa (and in the United States, the European Union, and Japan) are delayed on average thirty-nine months under MCC procedures. So lengthy are the delays that generic drug manufacturers began legal proceedings against the MCC in April 2004.<sup>40</sup> In an almost unbelievable example, the MCC approved a generic version of nevirapine (the drug used to stop mother-to-child transmission of HIV) in April 2003. The drug still cannot be sold, however, because the MCC has not approved the information pamphlet that goes in the box.<sup>41</sup>

The various MCCs in southern Africa were supposed to have harmonized their procedures and be working toward making drug registration simpler, faster, and cheaper, yet they seem to be going in the opposite direction. One of the authors of this essay, Richard Tren, sat through a presentation by the head of the Namibian MCC, who explained that all drugs registered in the country prior to 1990 would have to be re-registered. The reason she gave was that prior to 1990, all medicines were registered under the South African ministry of health regulations, but then Namibia gained independence and set up its own MCC and own ministry of health. This policy has no health benefit and is a shameless piece of bureaucratic empire building. The people who will pay for it are ordinary Namibians when medicines in that country become more expensive—or, as is more likely, when companies simply choose not to go through the expense and trouble of registering the drugs there in the first place.

Ensuring that drugs are safe and effective is of course crucial, particularly in countries where patient education is poor. Yet it seems that in many parts of Africa, the various medicines control councils are driven less by the need to ensure drugs are safe and more by a desire to build their own bureaucratic empires.

## Toward Meaningful Reform

There is little doubt that treatment gives hope to those suffering from HIV/AIDS. As a humanitarian effort it is essential, and it will alleviate the devastation of several African countries. However, the divisive debate over patents has deflected attention from the real problems in delivering treatment in Africa and other poor countries.

Activist groups and donor nations must turn their attention to the fundamental infrastructural problems that block access to medicines and good health care. They should also assist poor country governments in dismantling the bureaucratic obstacles that delay the registration of drugs and increase the cost of registering and marketing medicines in those countries. Ultimately, responsibility for the lack of access to medicines has to lie with poor country governments, and if diseases of poverty are to be tackled effectively in the future, it is incumbent on them to support the institutions of a free society that can generate wealth and reduce poverty.

## Notes

1. Joint United Nations Program on AIDS [UNAIDS], *Questions and Answers*, accessed at [www.unaids.org/en/resources/questions\\_answers.asp](http://www.unaids.org/en/resources/questions_answers.asp) on June 1, 2004.

2. Ibid.

3. Ibid. Despite the confidence with which these figures have been presented, we stress that there is great uncertainty about the accuracy of the statistics with regard to HIV infection and AIDS deaths. In most parts of Africa, health systems are so rudimentary that no proper epidemiological studies can be performed to get an accurate picture of the HIV/AIDS situation.

4. "AIDS in India: Abating, or exploding?" *The Economist*, April 17, 2004, available at [www.economist.com/printedition/index.cfm?d=20040417](http://www.economist.com/printedition/index.cfm?d=20040417).

5. Mark Monot, "Thank you for identifying a major source of HIV transmission in Africa and India!" electronic response posted to *British Medical Journal* forum, January 29, 2002, available at <http://bmj.bmjournals.com>.

6. Therese Hesketh, "Non-sexual transmission of HIV in China," electronic response posted to *British Medical Journal* forum, February 18, 2002, available at <http://bmj.bmjournals.com>.

7. David Gisselquist, Richard Rothenberg, John Potterat, and Ernest Drucker, "Non-sexual transmission of HIV has been overlooked in developing countries," letter, *British Medical Journal* 7331, no. 324 (2002): 235.

8. Donald G. McNeil Jr., "Romania declares victory in fight against AIDS," *New York Times*, February 12, 2004.

9. Robin Gedye, "Nurses to face firing squad for spreading HIV," *Daily Telegraph* (London), May 7, 2004.

10. "A looming plague," *The Economist*, September 26, 2002, available at [www.economist.com/displaystory.cfm?story\\_id=1360949](http://www.economist.com/displaystory.cfm?story_id=1360949).

11. Ibid.

12. Camille Roubleva, "Gay Russia Today," *The Gully*, May 13, 2004, accessed at [www.thegully.com](http://www.thegully.com) on June 7, 2004.

13. AIDS Infoshare, "AIDS in Russia," available at [www.spiral.com/infoshare/Article1.html](http://www.spiral.com/infoshare/Article1.html).

14. See Nicholas Eberstadt, "The Future of AIDS," *Foreign Affairs*, November 2002, available at [www.aei.org/news14436](http://www.aei.org/news14436).

15. Clive Bell, Shantayan Devarajan, and Hans Gerbach, "The Long-run Economic Cost of AIDS: Theory and an Application to South Africa," report (Washington, DC: World Bank, 2003), accessed at [www1.worldbank.org/hiv\\_aids/docs/BeDeGe\\_BP\\_total2.pdf](http://www1.worldbank.org/hiv_aids/docs/BeDeGe_BP_total2.pdf) on June 1, 2004.

16. World Health Organization, *Coverage and Need for Anti-retroviral Treatment*, accessed at [www.who.int/3by5/coverage/en/](http://www.who.int/3by5/coverage/en/) on June 1, 2004.

17. UNAIDS, *Questions and Answers*.

18. Oxfam, "Doha promise on 'life before patents' hangs in the balance," press release, November 13, 2002, accessed at [http://www.oxfam.org/eng/pr021113\\_doha\\_patents.htm](http://www.oxfam.org/eng/pr021113_doha_patents.htm) on June 1, 2004.

19. Michael Schull, "Effect of drug patents in developing countries," letter, *British Medical Journal* 7264, no. 321 (2000): 833.

20. Médecins Sans Frontières, "Zimbabwe government takes emergency action against HIV/AIDS," press release, May 29, 2002, available at [www.accessmed-msf.org/prod/publications.asp?scntid=30520021027514&contenttype=PARA&](http://www.accessmed-msf.org/prod/publications.asp?scntid=30520021027514&contenttype=PARA&).

21. Amir Attaran, "Do Patents for Antiretroviral Drugs Constrain Access to AIDS Treatment in Africa?" *Journal of the American Medical Association* 286, No. 15 (2001): 1886-1892.

22. Amir Attaran, "How do Patents and Economic Policies Affect Access to Essential Medicines in Developing Countries?" *Health Affairs* 23, No. 3 (2004): 155–166.

23. World Health Organization [WHO], *Address by the Director-General*, May 18, 2004, available at [www.who.int/mediacentre/events/2004/wha57/lee/en/print.html](http://www.who.int/mediacentre/events/2004/wha57/lee/en/print.html).

24. Compulsory License no 01/MIC/04, Government of Mozambique: Maputo, March 15, 2004.

25. A small part of the reason for the continued patent debate is that drug companies have continued to complain about patent attenuation and explain the importance of patents to ongoing research. While this is true for patenting in rich countries, it is somewhat disingenuous in poor countries. Africa does not provide enough income for the companies for them to worry about patenting there, except as an issue of precedent.

26. See Lawrence K. Altman and Donald G. McNeil Jr., "UN Agency Drops 2 Drugs for AIDS Care Worldwide," *New York Times*, June 16, 2004; and Richard Tren, "State Must Not Let South Africa Become Huge Clinical Trial," *Business Day* (South Africa), June 23, 2004.

27. World Bank Development Indicators, 2003, obtained using Economic Freedom of the World software.

28. United Nations Development Program, *Human Development Indicators* (New York, 2003).

29. *Ibid.*

30. United Nations Office for Humanitarian Affairs, Integrated Regional Information Network, "Antiretroviral scheme Draws poor response," news release, June 6, 2002. See also United Press International, "Nigeria AIDS drug deal soured," November 4, 2002; and Roger Bate, "Realism on African AIDS," Tech Central Station, May 2, 2003, available at [www.techcentralstation.com/020503C.html](http://www.techcentralstation.com/020503C.html).

31. Tamar Khan, "Unspent HIV millions 'to be rolled over,'" *Business Day*, June 1, 2004.

32. Dr. J. J. Hugo, "Malaria Case Management; current situation, challenges and priorities," Mpumalanga Department of Health conference paper, June 9, 2004, Department of Health Annual Malaria Review and Planning Meetings (Bela Bela, Limpopo Province, South Africa).

33. World Bank Development Indicators, 2003, obtained using Economic Freedom of the World software.

34. For more information on South Africa's malaria control policies, see Richard Tren and Roger Bate, "South Africa's War against Malaria: Lessons for the Developing World," Cato Policy Analysis No. 513, March 25, 2004, available at [www.cato.org/pubs/pas/pa-513es.html](http://www.cato.org/pubs/pas/pa-513es.html).

35. Central Intelligence Agency, "The World Factbook," available at [www.cia.gov](http://www.cia.gov).

36. All data in this section (other than that separately footnoted) came from the IMS Pharmacy database, accessed on May 5, 2004.

37. Clinton Presidential Center, "Clinton Foundation Announces Agreement on Major Reduction in Price of AIDS Drugs," press release, October 23, 2003, available at [www.clintonpresidentialcenter.com/drug\\_announcement.html](http://www.clintonpresidentialcenter.com/drug_announcement.html).

38. Some countries probably waive tariffs on imported drugs when pressured by foundations and donor governments, but the norm is for drugs to be taxed.

39. Joseph A. DiMasi, Ronald W. Hansen, and Henry G. Grabowski, "The price of innovation: new estimates of drug development costs," *Journal of Health Economics* 22, issue 2 (2003): 151–85.

40. Claire Keeton and Adele Shevel, "Drugs for the poor gather dust as Council drags its Feet," *Sunday Times* (South Africa), April 18, 2004.

41. *Ibid.*