

Facing an Epidemic:

An Analysis of HIV/AIDS, Antiretroviral Drugs, and International Response to the AIDS Pandemic

By: Michael Tate

Providence College Health Policy & Management Program

March 31st 2012

Dr. Todd Olszewski

When the HIV virus was first studied clinically in the early 1980s, it was reported in a relatively small number of cases, with less than 10,000 cases reported. Speculation of whether or not this new epidemic would cease to spread and eventually fade away was at the center of debate between politicians, physicians, epidemiologists, and assumptions were made by the public that it was only common among promiscuous, homosexual men and intravenous drug users.¹ However, in just over 30 years, the virus has spread rapidly around the globe, and current World Health Organization estimates of HIV/AIDS prevalence are currently higher than 33 million.²

Aside from humanitarian efforts to combat the disease, countries on every continent have also contributed to the fight against HIV/AIDS because of political concerns. A common occurrence in this respect is when developed nations give monetary aid to fight HIV/AIDS in nations struggling with the epidemic in an effort to gain favor with the latter nation's leaders, who may in return give priority of trading rights to the nation acting as a benefactor.³ Countries with high HIV/AIDS prevalence rates have experienced widespread economic repercussions from the expensive medical costs, which in turn affect trade with other nations. Faced with political and economic repercussions due to the prevalence of AIDS in almost every country, global superpowers, including the United States, have chosen to intervene in areas where HIV/AIDS has become a catastrophic problem, primarily in Sub-Saharan African countries.

The AIDS epidemic has no doubt attracted the attention of the pharmaceutical industry, which is eager to develop treatments for the disease, acquire patents for these treatments, and

¹ Hiltz, Philip. *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*. New York: Random House Inc., 2003. P. 242

² World Health Organization, "HIV/AIDS, Security and the Geopolitics of US: Nigerian Relations." Last modified 2011. <http://www.who.int/features/qa/71/en/index.html>.

³ Ingram, Alan. "HIV/AIDS, Security and the Geopolitics of US: Nigerian Relations." *Review of International Political Economy*. 14. no. 3 (2007): p. 514

profit from potential HIV/AIDS cures and treatments. In this pursuit of profit, companies have oftentimes been in conflict with those countries that have been affected greatest by the HIV virus, and these arguments deal with the cost of life-saving drugs, specifically antiretroviral drugs. Specifically, leaders in sub-Saharan African nations like Botswana are the loudest voices to argue that the pharmaceutical industry has a moral obligation to help out poorer counties by providing drugs at cheaper prices in order to combat AIDS. The HIV/AIDS pandemic is more than a health issue that is to be dealt with in isolation by local health authorities. The pandemic directly affects the world economy and global politics because nations that are ravaged by AIDS, like Malawi for example, which has an HIV/AIDS prevalence in adults of 11.9%, are forced to spend more and more of their GDP on healthcare and expensive treatment measures, which prevents them from developing their own industries and in turn weakens exports and trade relations with other nations.⁴ As wealthier nations find that trade has been affected by HIV/AIDS prevalence, and in the era of globalization, wealthy nations are compelled to take an interest in HIV/AIDS in foreign countries as well as domestically. Antiretroviral treatment is an effective tool in countering HIV, and wealthy nations that are giving aid to nations who need assistance in combating the pandemic should shift their focus to making these drugs more widely available if they want to put a stop to the AIDS epidemic.

The Human Immunodeficiency Virus, or HIV as it is commonly referred to, is the virus known to cause AIDS; it has stumped researchers for decades that have been working to trace the virus's ancestry. So far, no one has been able to pinpoint the exact time frame for when HIV had evolved into its current form. However, many scientists believe that it is related to and possibly

⁴ Krabacher, Thomas, Ezekiel Kalipeni, and Azzedine Layachi. *Global Studies: Africa*. New York: The McGraw-Hill Companies Inc., 2011. P. 178

descended from the Simian Immunodeficiency Virus, (SIV), because of their similar genotypes.⁵ SIV is a virus that affects primates and is believed to be thousands of years old. It has several different strains; at some point in time, two of the strains possibly mutated into the two known HIV strains: HIV-1 and HIV-2.⁶

When analyzing this theory on HIV's origin, it is likely that zoonosis took place as the SIV virus was somehow passed to human beings and developed into HIV. Several theories exist on how this transmission could have happened. The first transmission theory is known as the "Hunter Theory," and it postulates that the hunting and consumption of primate meat by humans is responsible for initial human infection of SIV and mutation into HIV.⁷ A second theory is the "Oral Polio Vaccine Theory." During the mid-20th Century, polio vaccines were given to about a million people in Africa. These vaccines were grown from primate kidney cells, and some scientists speculate on the possibility that the vaccines themselves could have been contaminated with the SIV or HIV virus.⁸ A third theory is the "Contaminated Needle Theory." This theory implies that the widespread use of needles to administer drugs may be to blame. Even if SIV had not yet mutated into HIV, shared needles could have been infected with the blood of human SIV carriers; the reuse of these needles in an attempt to reduce costs of immunization campaigns may have caused the spread of SIV, which later developed into HIV.⁹

⁵ AVERT.org, "The Origin of AIDS and HIV and the First Cases of AIDS." Last modified 2011. Accessed October 24, 2011. <http://www.avert.org/origin-aids-hiv.htm>.

⁶ AVERT.org, "The Origin of AIDS and HIV and the First Cases of AIDS." Last modified 2011. Accessed October 24, 2011. <http://www.avert.org/origin-aids-hiv.htm>.

⁷ AVERT.org, "The Origin of AIDS and HIV and the First Cases of AIDS." Last modified 2011. Accessed October 24, 2011. <http://www.avert.org/origin-aids-hiv.htm>.

⁸ AVERT.org, "The Origin of AIDS and HIV and the First Cases of AIDS." Last modified 2011. Accessed October 24, 2011. <http://www.avert.org/origin-aids-hiv.htm>.

⁹ AVERT.org, "The Origin of AIDS and HIV and the First Cases of AIDS." Last modified 2011. Accessed October 24, 2011. <http://www.avert.org/origin-aids-hiv.htm>.

No one knows the exact origin of HIV or how it began to affect humans, but it was not until the middle of the 20th Century that physical evidence of the virus was found. The first documented case of HIV infection was in 1959 in Zaire (now the Democratic Republic of the Congo). Blood plasma taken from an adult man was contaminated with the virus, and the very next year, HIV was found in a lymph node of a woman also living in Zaire. The disease was not widespread at this time and it did not get too much global attention, even after the death of an American teenager in 1969.¹⁰ As Philip Hilts mentions in his book, *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*, the world slowly began to recognize the disease as an epidemic, especially after 1984 when the prevalence of AIDS had passed 10,000 cases.¹¹ At this point in time, research on HIV/AIDS began to boom.

As Janis Hutchinson, a member of the Department of Anthropology at the University of Houston lays out in her article; the human immunodeficiency virus is a member of the lentivirus subgroup of the retrovirus family, which is known to produce chronic infections that weaken the host's immune system of over a period of time.¹² It cannot be transmitted through vectors such as inanimate objects, nor can it be spread airborne. The most common forms of transmission are through unprotected sexual contact, inoculation with blood products, (e.g. sharing of needles among intravenous drug users), and mother to infant infections or breastfeeding.¹³

¹⁰ AVERT.org, "The Origin of AIDS and HIV and the First Cases of AIDS." Last modified 2011. Accessed October 24, 2011. <http://www.avert.org/origin-aids-hiv.htm>.

¹¹ Hilts, Philip. *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*. New York: Random House Inc., 2003. P. 242

¹² Hutchinson, Janis. "The Biology and Evolution of HIV." *Annual Review of Anthropology*. 30. (2001): p. 87

¹³ Hutchinson, Janis. "The Biology and Evolution of HIV." *Annual Review of Anthropology*. 30. (2001): p. 87

The way that HIV operates is by attacking CD4 lymphocytes, which are T-cells that aid the immune system by alerting it of an outside threat in order for white blood cells to secrete antibodies. HIV is able to survive by infecting cells and causing them to either attack the immune system or destroy themselves, thus weakening the host's immune system's ability to fight off infections.¹⁴ Because CD4 counts within the bloodstream correlate with stages of HIV disease, the Centers for Disease Control and Prevention uses such counts as indicators of AIDS progression.

The primary (acute) infection is the first stage where HIV enters the bloodstream and takes up residency within cells, and person is contagious immediately upon infection. As the virus multiplies within the lymph nodes, it will be undetectable for the first few months or so because the body needs time to develop antibodies to attack HIV.¹⁵

The "Seroconversion" stage takes place about three to six months after initial infection; it is determined once the body has produced antibodies to fight HIV.

The "Asymptomatic" stage is defined once the infected host tests positive for HIV antibodies, although they generally experience no symptoms of disease other than minor swelling of the lymph nodes. Next is the Early and medium stage HIV Symptomatic Disease where the immune system has been weakened to the point where symptoms begin to occur that include: skin rashes, night sweats, mild weight loss, mouth ulcers, and skin/nail infections. Eventually, symptoms of this stage might also include: chronic cold sores, diarrhea, oral or vaginal thrush, ongoing fevers, and more significant weight loss. Lastly, late stage HIV

¹⁴ Hutchinson, Janis. "The Biology and Evolution of HIV." *Annual Review of Anthropology*. 30. (2001): p. 88

¹⁵ The HealthCentral Network Inc., "The Body: The Complete HIV/AIDS Resource." Last modified October 24, 2011. <http://www.thebody.com/content/art2506.html>.

Symptomatic Disease, which is commonly referred to as Acquired Immune Deficiency Syndrome, (i.e. AIDS). AIDS elicits more severe immune system degeneration and “opportunistic infections,” which are also called “AIDS-defining illnesses” like having CD4 counts of less than 200 per cubic millimeter of blood.¹⁶ While there is no known cure for AIDS, the mid-eighties was a time where a new treatment for the disease was first developed and used extensively today, and this type of treatment is called antiretroviral therapy (ART).

Before much was known about AIDS, the fact that it had spread rapidly among the homosexual male population initially caused people to initially ignore the incoming epidemic and view non-homosexuals as out of the virus’s reach. Even as the AIDS death toll began to steadily rise each year, Dr. Norbert Rapoza of the American Medical Association stated: “There are signs that the epidemic may slow because of the self-control of homosexual males.”¹⁷ Hilts also mentions that the pharmaceutical industry, despite the fact that the prevalence of AIDS had passed 10,000 in 1984, simply felt that it was economically irresponsible to work on developing drugs for an illness that affected less than 200,000 people.¹⁸

Fortunately, AIDS activists began to put pressure was put on the drug industry as well as academic centers to begin research and development on drugs to treat AIDS;¹⁹ eventually the National Institute of Health and scientists at Duke University agreed to test promising antiviral chemicals supplied by the pharmaceutical company Burroughs Wellcome. After tedious testing,

¹⁶ The HealthCentral Network Inc., "The Body: The Complete HIV/AIDS Resource." Last modified October 24, 2011. <http://www.thebody.com/content/art2506.html>.

¹⁷ Hilts, Philip. *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*. New York: Random House Inc., 2003. P. 242.

¹⁸ Hilts, Philip. *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*. New York: Random House Inc., 2003. P.242.

¹⁹ FasterCures, First, and First HCM Strategists. *Back to Basics: HIV Advocacy as a Model for Catalyzing Chance*. Washington, D.C.: FasterCures, 2011. [http://fastercures.org/documents/file/Back2BasicsFinal\(1\).pdf](http://fastercures.org/documents/file/Back2BasicsFinal(1).pdf) (accessed).

researchers found the compound azidothymidine (AZT) appeared to be effective in attacking the HIV virus.²⁰

In 1985, the Food and Drug Administration (FDA) approved AZT for phase I clinical testing with a small number of human subjects. The results from this initial test had shown that the human body could metabolize AZT without killing the person.²¹ Next, the drug was cleared for the larger trials of phase II testing in 1986, where AZT was tested on patients using double-blind studies, which is when neither the researcher nor the patient is aware of whether or not each specific patient is taking the experimental drug or a placebo. The results were astoundingly favorable towards the effectiveness of AZT. All of the patients taking a placebo had died during the course of the trial, but only one patient had died after taking AZT.²²

Although phase III testing is needed in order to determine long-term side effects and effectiveness of drugs, the FDA decided to approve Burroughs Wellcome's application to manufacture AZT in 1987 without the usual phase III testing. The FDA Commissioner at the time was Frank Young, who, as Hilts mentions, was a born-again Christian who felt that his nomination for FDA Commissioner was God's plan for him to carry out public service.²³ Perhaps Young had something to do with the speedy approval process of AZT because he recognized the importance of saving the lives of AIDS patients to be a pressing issue that could not wait a few years while the FDA oversaw more clinical trials. He was Commissioner in a

²⁰ Hilts, Philip. *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*. New York: Random House Inc., 2003. P. 243.

²¹ Hilts, Philip. *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*. New York: Random House Inc., 2003. P.243.

²² Hilts, Philip. *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*. New York: Random House Inc., 2003. P.244.

²³ Hilts, Philip. *Protecting America's Health: The FDA, Business, and One Hundred Years of Regulation*. New York: Random House Inc., 2003. P.238.

politically conservative era, which was one of the many times that the FDA would fall under criticism from industry and politicians for having too slow of an approval process. The administration's actions at the time may have been smart politically as well because the FDA could then dodge the potential bludgeoning from conservatives that would berate it for acting too slow as the country was beginning to face an epidemic.

Whatever the case, the FDA had decided that the benefits of antiretroviral therapy outweighed immediate risks of the drugs that were used, and this opened the door for more investment from the pharmaceutical industry, which saw the potential for profit in this new sector of medical business. It was known that CD4 lymphocyte counts within a person's bloodstream were good indicators of the stages of HIV disease; this piece of knowledge allowed drug researchers and technicians to monitor antiretroviral drugs' effectiveness in slowing the progress of HIV.²⁴ Because of the relative ease in observing the success of ART drugs like AZT, it was not long before new ways to combine different AIDS treatments were discovered.

In 1995, ART treatment began to evolve when doctors began to prescribe what JD Griffiths describes as a "cocktail" of antiretroviral drugs. Individuals who were diagnosed with HIV disease were given doses of 2 or more different types of drugs in an effort to fight off HIV infection with more efficacies. This more aggressive tactic of ART came to be called highly active antiretroviral therapy (HAART), and studies have shown that HAART is very useful in treating individuals who are suffering from the symptoms of early stage HIV, but the combination of certain drugs seems to show that they are not as effective in treating the later

²⁴ Griffiths, J.D., Z.F. Lawson, and J.E. Williams. "Modelling Treatment Effects in the HIV/AIDS Epidemic." *The Journal of the Operational Research Society*. 57. no. 12 (2006): 1413-1424. P. 1413.

stages of AIDS.²⁵ Part of the success of HAART in early stage HIV disease patients is the fact that such treatment prolongs HIV incubation times and delays chemical signals that signal the virus to activate and begin to reproduce and therefore slows the virus's attack on the host's immune system. Griffiths explains that prior to widespread HAART use, roughly 50% of young men suffering from HIV disease died within 12 years of initial infection, but after the introduction of more aggressive drug therapy, the reduction in the hazard ratio for AIDS-related death decreased from .47 in 1997 to .16 in 2001, (which meant that .16 of the experimental group died in comparison to the control group who did not receive HAART).²⁶

The results of a 2006 study shows that there is also evidence that HAART may aid in the cognitive function of AIDS patients with severe immune system depression. The neurological unit at the University of Benin Teaching Hospital in Benin City, Nigeria observed 69 patients in a longitudinal study dealing with HAART, and this team had found the neurological benefits of using HAART on AIDS patients. The patients had blood CD4 levels that designated them in mid to late stage HIV disease before they were put on a HAART regimen. 12 months later, the patients in the study were screened and had their cognitive and motor skills tested. The results of the study showed that the patients' cognitive test scores had improved 12 months after the start of their HAART. In addition to the increase in cognitive test scores, the patients' bloodstream

²⁵ Griffiths, J.D., Z.F. Lawson, and J.E. Williams. "Modelling Treatment Effects in the HIV/AIDS Epidemic." *The Journal of the Operational Research Society*. 57. no. 12 (2006): 1413-1424. P.1417

²⁶ Griffiths, J.D., Z.F. Lawson, and J.E. Williams. "Modelling Treatment Effects in the HIV/AIDS Epidemic." *The Journal of the Operational Research Society*. 57. no. 12 (2006): 1413-1424. P. 1413

CD4 counts had increased significantly, which demonstrates how effective HAART is in slowing the progress of HIV within the human body.²⁷

HIV secretes proteins that allow it to bind to cells in the body, multiply, and spread throughout the immune system. Antiretroviral drugs work by acting as chemical inhibitors to the proteins produced by HIV; by blocking these proteins, the virus finds it harder to carry out its normal functions within the body.²⁸ Like most viruses, HIV is capable of adapting, and as it develops, it is very common for the virus to mutate. As a consequence, a challenge exists in ensuring the potency of ART in order to continue to combat HIV. The dosage of any HIV medication can only be increased to a certain extent before the dose reaches toxic levels. Because of this, antiretroviral drugs must be rotated and replaced once their effectiveness begins to diminish because of HIV's propensity to mutate.²⁹ As one can imagine, the price of antiretroviral drugs can become a problem for countries with limited resources, and the problem compounds once viral resistance to certain drugs is accounted for. As a result of poorer countries having a limited access to ART, poorer countries, particularly in sub-Saharan Africa typically have higher HIV prevalence and mortality rates. As a potential way to alleviate the financial burdens placed on developing countries that are struggling to purchase ART drugs, the possibility of charitable actions by pharmaceutical companies has been discussed. Drug

²⁷ Obiabo YO, Ogunrin OA, Ogun AS. [Effects of highly active antiretroviral therapy on cognitive functions in severely immune-compromised HIV-seropositive patients.](#) J Neurol Sci. 2011 Oct 11.

²⁸ Pinheiro Edos S, Antunes OA, Fortunak JM. [A survey of the syntheses of active pharmaceutical ingredients for antiretroviral drug combinations critical to access in emerging nations.](#) Antiviral Res. 2008 Sep;79(3):143-65. Epub 2008 Jun 2. Review. PubMed PMID: 18571246.

²⁹ Pinheiro Edos S, Antunes OA, Fortunak JM. [A survey of the syntheses of active pharmaceutical ingredients for antiretroviral drug combinations critical to access in emerging nations.](#) Antiviral Res. 2008 Sep;79(3):143-65. Epub 2008 Jun 2. Review. PubMed PMID: 18571246.

developers could manufacture antiretroviral medications at a lower cost in order to sell them at discounted prices to nations that are hit hardest by the AIDS epidemic.³⁰ Companies that manufacture generic antiretroviral drugs in India for example may be ideal candidates for such a plan. Although generic drugs produced for developing nations may be a solution to lowering the costs of ART, potency of these drugs must be checked and regulated since there is the risk that such drugs manufactured in developing nations may not be crafted at the same standard as the drugs produced by larger and more well-known pharmaceutical companies.³¹

When President Festus Mogae of Botswana appealed to wealthy Western nations in 2000, including the nations who were in the G7 at the time, (i.e. United States, United Kingdom, France, Italy, Germany, Japan, and Canada), he made a connection between HIV/AIDS and the overall debt burden in Africa. This appeal must have been heard because the U.S. launched The President's Emergency Plan for AIDS Relief (PEPFAR) in 2003, which is largest commitment by a country to fight a single disease in the world.³² Mogae was speaking for all African nations dealing with the oppressive burden of high HIV rates, and his speech argued that the almost limitless wealth of the West should not be affected by giving aid or by helping poorer nations with getting access to current HIV/AIDS treatments.³³ During Mogae's time as Botswana's

³⁰ Pinheiro Edos S, Antunes OA, Fortunak JM. [A survey of the syntheses of active pharmaceutical ingredients for antiretroviral drug combinations critical to access in emerging nations](#). *Antiviral Res.* 2008 Sep;79(3):143-65. Epub 2008 Jun 2. Review. PubMed PMID: 18571246.

³¹ Pinheiro Edos S, Antunes OA, Fortunak JM. [A survey of the syntheses of active pharmaceutical ingredients for antiretroviral drug combinations critical to access in emerging nations](#). *Antiviral Res.* 2008 Sep;79(3):143-65. Epub 2008 Jun 2. Review. PubMed PMID: 18571246.

³² U.S. State Department, "About PEPFAR." Last modified 2011. <http://www.pepfar.gov/about/index.htm>.

³³ Krabacher, Thomas, Ezekiel Kalipeni, and Azzedine Layachi. *Global Studies: Africa*. New York: The McGraw-Hill Companies Inc., 2011. P.7

President, sub-Saharan Africa contained about 68% the world's HIV/AIDS cases,³⁴ and today, 23.9% of Botswana adults are living with HIV/AIDS.³⁵ With high prevalence rates of the disease in sub-Saharan Africa, the developing nations in this region have experienced crippling economic repercussions from the AIDS pandemic since these countries are spending so much money trying to fight the disease. Botswana imports roughly \$4.5 billion each year, but only exports about around \$4.7 billion, and when more and more of the country's GDP is being allocated to fight AIDS, it puts a strain on other ventures that may help boost the nation's economy.³⁶

Thomas Krabacher notes in his book *Global Studies: Africa* that the Botswana public health service was once praised for its healthcare delivery, but the AIDS pandemic has put such as strain on this system in recent years.³⁷ Although the idea of discounted ART treatments for countries like Botswana have been introduced, former President Mogae argues that this only worsens the economic situation for the country by creating more debt towards wealthier nations and pharmaceutical corporations that produce the medicine.³⁸ The issue gets more complicated when countries who accept loans from the International Monetary Fund (IMF). These countries must agree on a healthcare budget ceiling with the IMF in order to get debt relief, but countries who accept monetary aid to fight AIDS that exceeds the agreed upon budget ceiling risk losing

³⁴ Pinheiro Edos S, Antunes OA, Fortunak JM. [A survey of the syntheses of active pharmaceutical ingredients for antiretroviral drug combinations critical to access in emerging nations](#). *Antiviral Res.* 2008 Sep;79(3):143-65. Epub 2008 Jun 2. Review. PubMed PMID: 18571246.

³⁵ Krabacher, Thomas, Ezekiel Kalipeni, and Azzedine Layachi. *Global Studies: Africa*. New York: The McGraw-Hill Companies Inc., 2011. P. 171

³⁶ Krabacher, Thomas, Ezekiel Kalipeni, and Azzedine Layachi. *Global Studies: Africa*. New York: The McGraw-Hill Companies Inc., 2011.

³⁷ Krabacher, Thomas, Ezekiel Kalipeni, and Azzedine Layachi. *Global Studies: Africa*. New York: The McGraw-Hill Companies Inc., 2011. P. 172

³⁸ Krabacher, Thomas, Ezekiel Kalipeni, and Azzedine Layachi. *Global Studies: Africa*. New York: The McGraw-Hill Companies Inc., 2011. P. 7

monetary support from the IMF. Uganda found itself in such a situation in 2002, when it was forced to reject \$52 million for support in the fight against HIV/AIDS because that amount of money was more the IMF's healthcare budget.³⁹

In light of President Mogae's appeal to the G-7, studies conducted by the Global Fund to Fight AIDS, Tuberculosis, and Malaria have pointed to potential financial benefits to investing in treating AIDS in low/middle income countries ravaged by AIDS. The Global Fund to Fight AIDS, Tuberculosis, and Malaria was created in response to the United Nations' commitment to setting up an international fund to help cover the cost of providing expensive drugs to AIDS, tuberculosis, and malaria patients; by January of 2002, its secretariat was established to approve grants from public and private benefactors.⁴⁰ In their report: *Economic Returns to Investment in AIDS Treatment in Low and Middle Income Countries*, Stephen Resch et al argue that despite the international recession, it should benefit nations to invest in supplying antiretroviral treatment because of the positive health outcomes from using such medications. The study includes roughly 3.5 million cohorts who are receiving ART from Global Fund-supported health systems by the end of 2011, and the study is projected to continue through 2020. Resch et al estimate that to supply ART to these 3.5 million patients would cost about \$14.2 billion within the ten-year period, but could save about 18.5 million life-years. The payoff of treatment does not stop there, and the saving of lives/providing a better quality of life could potentially return \$12 billion to \$34 billion to the economy through a variety of factors, namely: increased work productivity

³⁹ Rennie, Stuart, and Frieda Behets. "AIDS Care and Treatment in Sub-Saharan Africa: Implementation Ethics." *The Hastings Center Report*. 36. no. 3 (2006): 23-31.

⁴⁰ The Global Fund to Fight AIDS, Tuberculosis, and Malaria, "Our History." Last modified 2011. <http://www.theglobalfund.org/en/about/secretariat/history/>.

by those who would normally be too sick to work, lowering the cost of orphan care, and increasing medical/hospice care savings due to the drop in global HIV/AIDS prevalence.⁴¹

In addition to the troubles associated with trying to get funding for ART, logistical issues surround the actual delivery of ART to other nations. Even with money from the Global Fund, many low/middle income nations experience problems with drug importation and internal distribution. One nation that faces such issues is Malawi. Located in Southern Africa, Malawi is known having some of the highest infant mortality rates in the world, and life expectancy at birth is only 43 to 44 years. The HIV/AIDS rate in adults is estimated to be about 11.9%, and this is made worse by the fact that there is roughly 1 physician for every 47,634 people in the country.⁴² The country is subject to weak supply chain management of medical drugs and devices, which Erik Schouten et al points out, has been worse since the expansion of ART delivery supported by the Global Fund, PEPFAR, UNAIDS, etc.⁴³ Such weaknesses in Malawi's ART supply chain management stem from the lack of a central warehouse to store drug supplies. This, in turn, affects the ability to take accurate inventory counts for antiretroviral drugs.⁴⁴

To make matters worse, Schouten et al point out that the drug supply system in Malawi has to deal with increasingly complicated drug formulations, which makes it more difficult to

⁴¹ Resch S, Korenromp E, Stover J, Blakley M, Krubiner C, Thorien K, Hecht R, Atun R. [Economic returns to investment in AIDS treatment in low and middle income countries](#). PLoS One. 2011;6(10):e25310. Epub 2011 Oct 5. PubMed PMID: 21998648; PubMed Central PMCID: PMC3187775.

⁴² Krabacher, Thomas, Ezekiel Kalipeni, and Azzedine Layachi. *Global Studies: Africa*. New York: The McGraw-Hill Companies Inc., 2011. pp 177-178

⁴³ Schouten EJ, Jahn A, Ben-Smith A, Makombe SD, Harries AD, Aboagye-Nyame F, Chimbwandira F. [Antiretroviral drug supply challenges in the era of scaling up ART in Malawi](#). J Int AIDS Soc. 2011 Jul 6;14 Suppl 1:S4. PubMed PMID: 21967844; PubMed Central PMCID: PMC3194149.

⁴⁴ Schouten EJ, Jahn A, Ben-Smith A, Makombe SD, Harries AD, Aboagye-Nyame F, Chimbwandira F. [Antiretroviral drug supply challenges in the era of scaling up ART in Malawi](#). J Int AIDS Soc. 2011 Jul 6;14 Suppl 1:S4. PubMed PMID: 21967844; PubMed Central PMCID: PMC3194149.

correctly estimate the drug supply, and this poses risks such as stock outs.⁴⁵ Considering the fact that it can take up to an entire year to determine the drug supply needs of the country, stock outs can be especially dangerous. This is because running out of ART drugs unexpectedly can delay the importation of new drugs while Malawi's understaffed supply management sector of the Ministry of Health assesses the need for such medicine.⁴⁶

Fortunately, there are examples of developing countries successfully lowering their HIV/AIDS prevalence through a well organized drug supply chain and standardized treatment therapy, and Brazil is perhaps the brightest success story. Brazil has been hit harder by the AIDS epidemic than any other nation in Latin America: it is responsible for 57% of infections in Latin America and 3% of worldwide infections.⁴⁷ In his article, João Biehl argues that Brazil's treatment policy that was shaped by AIDS activists in the 90s has been a model for other developing nations to follow because since 1998, Brazil's HIV/AIDS prevalence has been on the decline. Biehl mentions that progressive health professionals campaigned to win government positions that have allowed them to make changes in health policy by maintaining the view that antiretroviral therapy is a human right.⁴⁸ Biehl's article discusses how property protection laws from the World Trade Organization had kept the price of antiretroviral drugs artificially high by allying with the private sector of the pharmaceutical industry, and the poor AIDS patients in

⁴⁵ Schouten EJ, Jahn A, Ben-Smith A, Makombe SD, Harries AD, Aboagye-Nyame F, Chimbwandira F. [Antiretroviral drug supply challenges in the era of scaling up ART in Malawi](#). J Int AIDS Soc. 2011 Jul 6;14 Suppl 1:S4. PubMed PMID: 21967844; PubMed Central PMCID: PMC3194149.

⁴⁶ Schouten EJ, Jahn A, Ben-Smith A, Makombe SD, Harries AD, Aboagye-Nyame F, Chimbwandira F. [Antiretroviral drug supply challenges in the era of scaling up ART in Malawi](#). J Int AIDS Soc. 2011 Jul 6;14 Suppl 1:S4. PubMed PMID: 21967844; PubMed Central PMCID: PMC3194149.

⁴⁷ Biehl, João. "Pharmaceuticalization: AIDS Treatment and Global Health Politics." *Anthropological Quarterly*. 80. no. 4 (2007): p. 1086

⁴⁸ Biehl, João. "Pharmaceuticalization: AIDS Treatment and Global Health Politics." *Anthropological Quarterly*. 80. no. 4 (2007): p. 1087

Latin America, (who were the majority of patients), were unable to get access to therapy.⁴⁹ Progressive health officials were able to collaborate with non-governmental organizations (NGOs), and grassroots AIDS activist groups to analyze the countries universal right to healthcare and worked out a solution politically to lower the price of drugs to meet the demand for care by threatening pharmaceutical company with required licenses to deal within Brazil if prices were not lowered.⁵⁰ With this political move was combined with laws that allow for the reverse engineering of drugs to produce quality generic brands of ART medications, Brazil has been able to reduce AIDS mortality; the Health Ministry reported a 70% reduction in the use of AIDS-related hospital services.⁵¹ Brazil has been able to combat the private industry through government-NGO collaboration, which shows that a developing nation can successfully fight against an epidemic as long as it is united politically and socially for the common good.

The United States has been at the forefront of the battle against the epidemic, especially since the introduction of PEPFAR in 2003, which aims to improve the overall health of developing nations that struggle against the AIDS pandemic by providing monetary support while allowing nations to run their own health programs.⁵² Alan Ingram of the Department of Geography at the University College London examines the political and militaristic reasons behind the formation of PEPFAR in his article *HIV/AIDS, Security, and Geopolitics of U.S.-Nigeria Relations*. Ingram claims that in a post-Cold War era, the United States has seen itself as having a duty to intervene in economically weak or war-torn in an effort to “fortify” such nations

⁴⁹ Biehl, João. "Pharmaceuticalization: AIDS Treatment and Global Health Politics." *Anthropological Quarterly*. 80. no. 4 (2007): p.1087

⁵⁰ Biehl, João. "Pharmaceuticalization: AIDS Treatment and Global Health Politics." *Anthropological Quarterly*. 80. no. 4 (2007): p. 1087

⁵¹ Biehl, João. "Pharmaceuticalization: AIDS Treatment and Global Health Politics." *Anthropological Quarterly*. 80. no. 4 (2007): p. 1088

⁵² U.S. State Department, "About PEPFAR." Last modified 2011. <http://www.pepfar.gov/about/index.htm>.

against threats of terrorism. The justification for this political view is to establish what Ingram calls a “liberal peace” in which a strong nation attempts to stabilize developing nations to promote internal security against terrorism.⁵³ While an attempt to establish peace is clear on the surface, Ingram postulates that the U.S. has exercised peace efforts with an underlying theme to gain favor with foreign nations that have valuable resources, particularly oil.⁵⁴

One such case is the relationship that the U.S. has developed with Nigeria. Nigeria is known to be rich in the amount of crude petroleum reserves under its soil, which has attracted American interest. In addition to this fact, just over 3% of the Nigerian population is living with HIV/AIDS.⁵⁵ Because PEPFAR had allocated up to \$48 billion dollars over a 5-year period to deal with the AIDS epidemic, the U.S. has felt that forming a relationship with Nigeria that would involve sending funding to fight AIDS in the African nation would be a wise financial investment since such a relationship would be mutually beneficial, i.e. Nigeria would get funding to fight AIDS while America could potentially be granted access to Nigeria’s oil supply.⁵⁶ Therefore, U.S. interest in AIDS in Africa is fueled more by a desire to secure a healthy business relationship with a nation rich in energy resources than strictly philanthropy.

In regards to the various areas where the United States military is stationed to try and maintain the liberal peace of the occupied country, the Pentagon certainly has an interest in protecting America’s troops in militarized zones such as Libya, Somalia, or Uganda against infectious diseases, and HIV research by the military has become a part of the President’s

⁵³ Ingram, Alan. "HIV/AIDS, Security and the Geopolitics of US: Nigerian Relations." *Review of International Political Economy*. 14. no. 3 (2007): p. 513

⁵⁴ Ingram, Alan. "HIV/AIDS, Security and the Geopolitics of US: Nigerian Relations." *Review of International Political Economy*. 14. no. 3 (2007): p. 514

⁵⁵ Krabacher, Thomas, Ezekiel Kalipeni, and Azzedine Layachi. *Global Studies: Africa*. New York: The McGraw-Hill Companies Inc., 2011. P. 252

⁵⁶ U.S. State Department, "About PEPFAR." Last modified 2011.
<http://www.pepfar.gov/about/index.htm>.

National Security Strategy.⁵⁷ In this instance, a “militarization of AIDS treatment abroad can be a positive tool in facing an epidemic. Because U.S. armed forces are capable of being a powerful disease vector, care must be taken when deploying troops into new areas, and the Pentagon must be diligent in its efforts to prevent HIV infections within the U.S. armed forces, especially when they are serving in nations with such high disease prevalence.

Whether or not one agrees with the ethics and justifications of U.S. military occupation and economic interests, the unveiling of PEPFAR in 2003 was certainly a large step forward in the fight against HIV/AIDS. As Ingram notes, the U.S. is treating AIDS as a threat to international security, and because the disease impacts developing nations financially, it can leave such nations susceptible to terrorism or military coup d'états from disgruntled citizens.⁵⁸ Between 2004 and 2006, somewhere between \$207 million and \$322 million dollars were put forth through PEPFAR, and 12 out of the 15 nations receiving aid were in sub-Saharan Africa for the very reasons that Ingram puts forth.⁵⁹ Just like Brazil's multilateral cooperation between various parties to lower AIDS prevalence, PEPFAR relies on the cooperation between NGOs, religious groups, global health organizations, and AIDS relief groups. While João Biehl praised such cooperation and described the success it had in Brazil, working to provide aid to several countries on a larger scale presents newer problems regarding local politics in addition to conflicts with the local cultural attitudes or religious beliefs. Because PEPFAR allows each

⁵⁷ The U.S. Military HIV Research Program, "U.S. Military HIV Research Program." Last modified November 30, 2011. <http://www.hivresearch.org/about.php?AboutusID=6>.

⁵⁸ Ingram, Alan. "HIV/AIDS, Security and the Geopolitics of US: Nigerian Relations." *Review of International Political Economy*. 14. no. 3 (2007): p. 511

⁵⁹ Gordon, Gill, and Vincent Mwale. "Preventing HIV With Young People: A Case Study from Zambia." *Reproductive Health Matters*. 14. no. 28 (2006): p. 69

individual nation that receives financial aid to run their own AIDS programs, it is hard to control specifically where each dollar that is donated ends up.⁶⁰

In their article in the journal *Reproductive Health Matters*, Gill Gordon and Vincent Mwale outline the internal strife that conservative religious leaders deal with regarding the sending of mixed messages that promote abstinence before marriage and condom use to prevent the spread of infectious diseases.⁶¹ They cite such an instance in Zambia, where it is reported that some health workers believe that condom use allows girls to “get away” with sex instead of being “punished with pregnancy.”⁶² Tensions between cultural values and effective AIDS prevention techniques are clearly high, but since the U.S. government did not want to be a central authority that dictates how each nation deals with their HIV/AIDS crisis, roughly 33% of PEPFAR’s AIDS prevention funding goes to support abstinence-only education in order to limit conflict between the government and the people’s cultural values, and it has been argued by religious groups in nations like Zambia that preaching abstinence before marriage promotes overall fidelity and morality. There is also a voice in these countries that says that condom use should only be promoted for “high risk groups:” specifically sex workers.⁶³

While it is important to pay attention to how specific countries feel the proper way to deal with their own internal issues, when dealing with an international pandemic, some countries have been more successful than others in keeping AIDS in check. When sub-Saharan

⁶⁰ U.S. State Department, "About PEPFAR." Last modified 2011.
<http://www.pepfar.gov/about/index.htm>.

⁶¹ Gordon, Gill, and Vincent Mwale. "Preventing HIV With Young People: A Case Study from Zambia." *Reproductive Health Matters*. 14. no. 28 (2006): p. 71

⁶² Gordon, Gill, and Vincent Mwale. "Preventing HIV With Young People: A Case Study from Zambia." *Reproductive Health Matters*. 14. no. 28 (2006): p. 71

⁶³ Gordon, Gill, and Vincent Mwale. "Preventing HIV With Young People: A Case Study from Zambia." *Reproductive Health Matters*. 14. no. 28 (2006): p. 69

Africa still has over 60% of HIV/AIDS cases, there must be a health policy change because a heavy emphasis on abstinence-only education is clearly not working. Gordon and Mwale present another study that was done among Zambia's youth; the results of this study reported that youths enrolled in abstinence-only AIDS prevention programs are more likely to have unprotected sex, which is possibly because of a lack of education on healthy sexual behavior.⁶⁴

It appears from Gordon and Mwale's article that the dominant religious groups overshadowing of effective AIDS prevention techniques are severely undermining effective treatment strategies. The document evidence of distorted education techniques being used by local African youth groups that are supported through PEPFAR such as spreading lies that condoms never work, and a few religious groups feel that abstinence before marriage is so important that they advocate teens getting married earlier as a strategy for moral AIDS prevention. Another U.S.-funded organization in Zambia reportedly put condoms in the microwave before pouring milk into them to show that "all condoms have holes in them."⁶⁵ Gordon and Mwale argue that there needs to be a ideological shift in counties like Zambia, and misconceptions about condom use must be cleared up. They take note of reports that suggest that youth programs spread incorrect information such as the myth that only promiscuous people or sex workers use condoms.⁶⁶ It goes to show that PEPFAR has issues with attempting to reconcile local AIDS prevention leadership and strategies with international (and more successful) strategies that are in clear conflict with each other. People are having sex outside of

⁶⁴ Gordon, Gill, and Vincent Mwale. "Preventing HIV With Young People: A Case Study from Zambia." *Reproductive Health Matters*. 14. no. 28 (2006): p. 75

⁶⁵ Gordon, Gill, and Vincent Mwale. "Preventing HIV With Young People: A Case Study from Zambia." *Reproductive Health Matters*. 14. no. 28 (2006): pp. 71-72

⁶⁶ Gordon, Gill, and Vincent Mwale. "Preventing HIV With Young People: A Case Study from Zambia." *Reproductive Health Matters*. 14. no. 28 (2006): p. 74

marriage anyway, so promoting condom use as an effective primary prevention strategy would be a better utilization of the resources provided by PEPFAR if developing nations are serious about cutting down on HIV/AIDS prevalence and mortality.

In 2009, the U.S. understood that PEPFAR was a widely needed program, and phase II of PEPFAR was introduced. In the 7th Annual Report to Congress on PEPFAR, a proposed budget was presented that projected how PEPFAR's funds would be allocated. Almost 6% of PEPFAR funding is to go towards abstinence only education and 8.4% of prevention funds are allocated to cover all other methods of sexual prevention.⁶⁷ This means that abstinence-only prevention techniques are given almost the same amount of funding as all other sexual prevention measures combined. This is an unwise move by the U.S., and the government should revise the protocols for giving financial aid to nations because abstinence-only strategies have yet to be proven as effective as condom use. Only 13.7% of the budget is dedicated to the procurement of antiretroviral drugs for developing nations, which is relatively low compared to how much the United States is spending on youth groups who promote strictly abstinence.⁶⁸

Perhaps it would pay to reallocate the money into strategies that aid those who are already living with AIDS, which is what Brazil did. PEPFAR is partnered with NGOs and other various activists groups, and it has the power to unite these groups behind a cause to lower the price of antiretroviral drugs. The problem with this is that the U.S. is so close to major pharmaceutical companies who produce ART medications, and to many conservative

⁶⁷ The President's Emergency Plan for AIDS Relief, "The United States President's Emergency Plan for AIDS Relief." Last modified 2011. Accessed December 12, 2011. <http://www.pepfar.gov/press/seventhannualreport/166594.htm>.

⁶⁸ The President's Emergency Plan for AIDS Relief, "The United States President's Emergency Plan for AIDS Relief." Last modified 2011. Accessed December 12, 2011. <http://www.pepfar.gov/press/seventhannualreport/166594.htm>.

politicians, it would be unthinkable to threaten these corporations with licenses to deal to counties that are supported through PEPFAR. There needs to be a breakdown of the barriers between companies that create ART drugs and reality that most areas ravished by AIDS cannot afford this medication. Once this is realized, there can be greater partnership between governments and the private industry that has the resources to help the millions of people who are suffering.

When HIV/AIDS was understood to be a growing epidemic, activism surged, especially in the U.S., and these AIDS activists were responsible for being the catalyst behind health policy changes that included the dedication to research on antiretroviral drugs and the dissemination of information on the disease and how to prevent it. As FasterCures and HCM Strategists point out in the article *Back to Basics*, the grassroots movements were fueled by fear of the disease and an anger with the lack of effective governmental response to AIDS.⁶⁹ The U.S. and other wealthier nations were able to keep AIDS under control, and this was because of the dedication of activists groups within each nation who pressured policy makers for change. It was successful for these nations, and there is no reason that any grassroots organization in developing counties that is committed and united in the cause to end the HIV/AIDS pandemic. These groups must understand that it is possible to lower the costs of antiretroviral therapy within their homelands if they place political pressure on their health policy officials to help drive down the costs of drugs by encouraging the purchase of high quality generics to compete with expensive brand names. Local groups in countries that receive PEPFAR funding must also

⁶⁹ FasterCures, First, and First HCM Strategists. *Back to Basics: HIV Advocacy as a Model for Catalyzing Chance*. Washington, D.C.: FasterCures, 2011. [http://fastercures.org/documents/file/Back2BasicsFinal\(1\).pdf](http://fastercures.org/documents/file/Back2BasicsFinal(1).pdf) (accessed).

know that they have the power to tell the U.S. how they want to be funded, and this implies that for real change to happen, proper information about AIDS prevention and the value of ART must be disseminated.