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The Cost of Life

A child lies incapacitated on a village cot in the depths of an African forest. A fever rages through his small, emaciated body. Sweating profusely, he mumbles unintelligibly through his fever ridden dreams. Plagued with constant diarrhea, vomiting, fever, and extreme abdominal pain, this child has rotavirus, a disease easily cured in the United States, but a death sentence to children in third world countries (Rotavirus).

The fact that this scene has become a cliché is a telling indication of the prevalence of this disease. Rotavirus infects over 5.5 million children worldwide every year (Paulson). Vaccines and oral medication make the virus a small hazard in developed countries, but this disease continues to be the leading cause of death elsewhere (Paulson). It is approximated that fewer than 5% of rotavirus cases receive proper treatment, and that yearly over 600,000 children, perish from a disease that is easily curable (Rotavirus). This scenario is just one of many proving the need for drug distribution in third world countries (Kumariah). Countries such as the United States and Great Britain have developed cures and vaccines that could save millions of lives each year; however, these drugs never reach the frontiers where they are desperately needed (Kumariah).

Why are life saving drugs being withheld? The simple answer is money. Although drug companies may ultimately seek the betterment of medicine, their main agenda is profit (Weisbrod). They are, after all, commercial entities, and thus are often unwilling to provide services for the drastically reduced prices needed by third world countries.

Diseases that otherwise would have been eliminated remain virulent in these third world countries because money means more then lives to these drug companies. Countless individuals perish needlessly every year; all because they do not represent a source of economic profit. Agencies impeding drug distribution must understand that the social benefits of drug distribution exponentially outweigh the adverse economic side-effects.

The AIDS epidemic provides an excellent case study for analyzing the socio-economic aspects of drug distribution. Although AIDS still poses a threat here in America, education and antiretroviral treatment have softened the impact of the disease. Not twenty years ago, HIV spread like wildfire; today, statistics show that HIV is on the decline in the United States. The same cannot be said for places like India and Africa. From India's first case of HIV in 1986, the incidence of this disease has reached critical levels (Economist). According to the most conservative estimate, 600,000 Indians already have AIDS (Economist). Approximately 4.58 million more are infected with HIV and continue to spread the disease to others (Economist). AIDS runs even more rampant in parts of Africa, and particularly in South Africa, where approximately 20% of the adult population tests positive for HIV (Economist). The AIDS pandemic, via proximity alone, effects a quarter of the world's population and is therefore a major concern to the entire world--including the United States (Economist). Drug distribution into this area could extend millions of lives and ease untold suffering. Yet, this incentive for life has met harsh economic resistance from drug companies.

"AIDS is an expensive disease, expensive to prevent and expensive to treat" (Economist). Poor countries, such as India, do not have the resources to fund large-scale prevention programs, and so they must rely on outside philanthropy to fight diseases.

Drug distribution is the sole hope of these countries. However, drug companies are not philanthropic firms. Investment in subsidized drug distribution into poor countries presents little economic gain; therefore, most companies choose not to supply drugs to AIDS riddled areas. Because of this decision, AIDS is thriving, and millions are suffering.

Although India is on the verge of calamity, there is hope. India's current situation is similar to that of Thailand just a decade ago. During the AIDS epidemic in Thailand, almost a quarter of the men and a tenth of the pregnant women tested positive for HIV in some provinces (Economist). Thailand shrouded AIDS in mystery. Those infected lived reclusive lives with little hope of treatment. Both drug companies, and governments decided it was time to forgo economic principles and concentrate on humanity instead; the results was astounding. Through subsidized antiretroviral treatments and endorsed "100% condom use programs" AIDS was successfully fought in Thailand (Economist). Drugs were made highly available for only 55 cents per individual (Economist). Even the poorest were able to purchase HIV treatment. The stigma surrounding the virus was dissipated through education, and the country made an amazing recovery. AIDS is now at an all time low in Thailand. By 2020, the country should be nearly HIV-free, all because of the anti-AIDS campaign endorsed by the US government, the Thai government, and most importantly, the American drug industry (Economist). The US drug industry took a small economic loss at the time, and served greater humanitarian good; ten years later, their actions are generating profit in Thailand. Therefore, the theory that drug distribution is not economically sound also proved false. Thailand's experience with AIDS provides an excellent model of how effective and positive drug distribution can be (Economist).

The Thai AIDS pandemic provides an exceptional reference for analyzing subsidized drug distribution. The scenario addresses the effects of drug distribution, both to US drug firms and to the countries in need, by showing its positive results in a poor, third world country. But the need for drug distribution surpasses just these few diseases; there are hundreds of other diseases for which drugs are not being distributed worldwide Scenarios like that of AIDS in Thailand are rare; developed countries are not providing for the less fortunate as they should be. The economic barriers that impede the progress of drugs to frontier countries must be demolished. It is the job of these advanced countries to assist others in need.

Many diseases have been eliminated from Western shores, yet thrive in poorer areas of the world. As these diseases are removed from American vocabulary, the threat of new outbreaks from these frontier regions becomes greater. If a certain infectious disease is wiped out here in America, we quickly forget it ever existed. We stop vaccinating our children and fail to protect ourselves from the now distant disease. And so a nightmare scenario emerges; what if a new strand of the disease is introduced by a foreigner residing in an underdeveloped frontier region where the disease runs rampant? There is a possibility of a large-scale outbreak in the United States, and the death of thousands of Americans. Therefore, not only is it drug distribution beneficial to the countries plagued by the disease, but also to developed regions. For example, as long as AIDS thrives in areas of the world, there is no hope for complete elimination of the disease. If we provide drug subsidies and free prices to those who otherwise would continue the spread of disease, we can eliminate diseases altogether from the worldwide community and protect everyone.

Yet another case study to prove the beneficial results of drug distribution into poor countries is the complete elimination of smallpox by the World Health Organization (World Health Organization). In the first half of the last century, small pox was a devastating killer. With a vaccine invented in the 19th century and commercially developed in the 1960's, small pox was wiped out quickly in the United States. However, it continued to thrive worldwide. Since smallpox had no animal reservoirs, it was a perfect candidate for elimination (Small Pox and Vaccines). In 1967, The WHO, in coordination with several drug companies, purchased vast quantities of the smallpox vaccine to be distributed freely around the world (Small Pox Vaccines). With the United States, WHO, and drug companies playing their parts, smallpox was eliminated by 1980. (World Health Organization) Although it remains a threat via bio-terrorism, the disease itself no longer threatens the lives of human beings.

Drug distribution into needy countries will save countless lives. We have the medicine. We have the technology. So how do we make the distribution cycle work? A solution does exist. The drug companies must first be convinced that the cause of distribution is not only socially, but also economically beneficial. Next, governments and other agencies must step in; the task of drug distribution cannot rest solely on the shoulders of the drug supplier. Governments must work cooperatively with each other and pharmaceutical agencies to assist third world countries. For instance, if governments provide incentives for drug companies to manufacture and supply drugs at low cost prices, drug distribution will become more viable economically. Once these incentives become large enough to balance the economic adversities, it is actually beneficial to the pharmaceutical firms to provide services. The firms can then produce the drug to be

openly distributed.

Also, firms must realize that the economic side effects to providing these drugs are minimal. American firms make billions of dollars just in the American market. After initial development of a drug, marginal production costs drop exponentially (Weisbrod). Drug prices in America are extremely high because firms intend to make up all their lost money and then some. However, firms can provide these drugs to third world countries at special low prices, and not take a loss(as shown in Thailand), not to mention provide important humanitarian aid. Combine this low economic cost with government incentives such as tax breaks and subsidies, and you have the most integral component of the distribution chain, a willing supplier. This combination is becoming increasingly the method of establishing humanitarian aid to third world countries.

Returning to the original scenario of the Rotavirus, we see an exemplary case of government assistance, philanthropic agendas, willing drug companies, and ecstatic third world countries. The Bill and Melinda Gates Foundation is a philanthropic organization seeking the betterment of the human condition (Paulson). The organization recognized the danger of the rotavirus and made the disease their number one target, dedicating over thirty million dollars to the cause (Paulson). By providing enormous subsidies to drug firms, in addition to those given by federal aid, the agency purchased vast amounts of rotavirus vaccine and treatment drugs (Paulson). The drug companies were of course willing to sell such large quantities of drugs because of special price incentives and federal aid. The Gates Foundation provides cost free vaccinations around the globe. It has declared its goal that the rotavirus will no longer be the number one killer of mankind—a goal reachable only with cooperation between private industry and government, and a

humanitarian will.

Smallpox was fought into extinction. The rotavirus is being adequately addressed and will soon be rendered benign and AIDS will, hopefully, cease to exist in many areas; all because of successful drug distribution. Millions of lives have been saved, and millions more will be, if firms and governments realize that the benefits of assisting third world countries surpass economic gain. As long as human disease reservoirs exist throughout the world, no one is safe. It is in the best interest for American drug companies, and the American people, to save the lives through education and drug distribution. Not only are lives spared overseas, but also here in the states. However, is only the beginning--third world countries must be educated to use and distribute drugs correctly. Increased education will make drugs more effective and less likely to be overused and abused (Brugha). We have the medicine to save lives, and the means to distribute it. We must now show the will.

Sources

Abating or Exploding: AIDS in India. *The Economist.* April 17th 2004. 371(p20-23)

Brugha, Ruairí**.** Antiretroviral treatment in developing countries: the peril of neglecting private providers. BMJ. http://bmj.bmjjournals.com/cgi/content/full/326/7403/1382

Kumariah, Balasubramaniam Interview with Multi National Monitor A Healthy Drug Policy for the Third World http://multinationalmonitor.org/hyper/issues/1992/12/mm1292_09.html

Paulson, Tom, Gates Foundation is creating markets for drug innovators. SeattlePI.com http://seattlepi.nwsource.com/globalhealth/151859_markets10.html

Rotavirus. National Center for Infectious Diseases. http://www.cdc.gov/ncidod/dvrd/revb/gastro/rotavirus.htm

Small Pox and Vaccines. NCBI http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowSection&rid=vac c.chapter.3

Weisbrod, Bruton. Solving the Drug Dilemma. Northwestern University. http://www.northwestern.edu/ipr/publications/newsletter/iprn0312/weisbrod.html

World Health Organization. The global eradication of smallpox. Final report of the global commission for the certification of smallpox eradication. In History of International Public Health No. 4. Geneva, World Health Organization, 1980