



WORLD HEALTH ORGANIZATION

Water, Sanitation, and Neglected Diseases Update

By Horatio Thomas

Introduction

Over the last 40 years, as healthcare in the western world has improved and colonial interests in Africa and Latin America have decreased, research and development of treatments for diseases that primarily affect these regions has all but vanished. Consequentially, many diseases caused by simple bacterium and flies have spiraled out of control in developing countries, despite the ease of treatment. In Ethiopia, a disease called **trachoma** that costs \$10 USD in the US to treat affects millions because many cannot afford the \$1400 USD Ethiopian price tag. Much of the added expense results from having to import the treatment from abroad and the scarcity of individuals who can perform the procedure in the region. Trachoma, however, is only one of the fourteen diseases listed by the World Health Organization as **neglected diseases**.

Trachoma—a bacterial infection of the eye that causes inflammation of the eyelid; one of fourteen neglected diseases.

Neglected diseases—a group of infections, which are common in low-income populations in developing countries.

Summary of the Problem

Recent studies have shown that inadequate sanitation and lack of treatment has allowed some diseases to spiral out of control. Large portions of the world have inadequate plumbing, and although most have access to “improved drinking water,” large portions of the population in sub-Saharan Africa only have access to contaminated water. Because the developing world lacks the capital to invest in more sophisticated sanitation and pharmaceutical capabilities, these communicable diseases continue to spread unabated. Over the past decade, the developed world has increased its efforts to help combat diseases in the developing world. Public pressure has encouraged large pharmaceuticals to invest in research focused on neglected diseases; additionally, governments have provided incentives to help pharmaceutical companies with the drug-discovery process. Despite the growing public awareness of neglected diseases and the relative simplicity of their treatment, more work is needed to successfully eradicate these neglected diseases.

Recent Developments

Drug Availability

In November of 2007, the World Health Organization met to discuss its future strategy to combat neglected diseases. At the end of a week of negotiations, the organization finalized the Global Strategy and

Plan of Action on Public Health. This strategy called for increase funding and aid from developed countries, but it also called for greater respect of international intellectual property rights. Many pharmaceuticals expressed worries about undertaking expensive research to develop drugs if other countries would simply grant **compulsory licenses** to other firms before their patent expired, as Brazil did with newly developed HIV medication. In order to combat the high costs of the actual drug, the Brazilian government granted compulsory licenses that allowed Brazilian companies to freely remake an anti-HIV drug that was created at great expense.

Margaret Chen, the general manager of the WHO, remarked that “the challenge is to work on multiple fronts: to meet the immediate need for equitable access to quality, affordable medicines, while also at the same time, working to stimulate innovation.” The organization applauded the current patent-based research and development system that has generated the majority of medicines that exist today. However, world regions with enough wealth to finance research rarely see these types of diseases and therefore have no incentive to produce the drug. Therefore, the WHO is concerned that the traditional **patent-based system** may prove inadequate for treatment for neglected diseases. Treatments for diseases that affect both the developed and developing world are easier to develop because the pharmaceutical companies can sell the treatment at a higher price to developed nations to offset the lower price they offer to developing nations. The lack of demand for treatments for neglected diseases in the developed world means a combination of private and public funds will likely be needed to combat the problem of neglected disease.

Informing the Public

Global health problems have remained below the radar for many individuals in the developed world because the national media rarely covers these topics in depth. To combat this lack of public awareness, the Bill and Melinda Gates Foundation gave a \$3.5 million grant to help raise public awareness on the state of neglected diseases and other international public health concerns. They also gave a separate \$6 million grant given to Boston’s public television station to create a series on world health. The Gates Foundation believes that an informed public is an active public, and as such, they have sought to decrease the gap between the developed world and the undeveloped world with public awareness campaigns coupled with conventional monetary support.

Cholera Prevention

A group of university students from the United States and India at Hebrew University devised a plan that allowed the Red Cross to significantly curb infections in Kenyan’s displaced person camps in early

Compulsory license—
a situation in which the government forces a copyright holder to grant use of to others; usually the copyright holder receives some royalties from this.

Patent-based system—
a system in which the holder of a patent has exclusive production rights until the patent expires.

2008. The group noted that integrating prevention techniques into rudimentary healthcare services and early reporting of water supply contamination helps to significantly reduce cholera outbreaks. Their plan seeks to increase the availability of safe drinking water, prepare the government for a rapid response to health emergencies, promote community awareness of signs of cholera and prevention methods, and explain how to conduct essential post-outbreak investigations to minimize recurrence. As of 2008, only Kenya intended to fully implement the prescribed plan. The students hope, however, that surrounding countries such as Nigeria and Ethiopia will also implement the outlined procedures.

Delivery of Care

Treatments that have been developed and can be performed cheaply in the US are relatively expensive in developing countries, primarily because of the shortage of qualified individuals who can perform these procedures in the developing world. Finding a doctor to carry out treatments can be prohibitively expensive. Additionally, the materials for these treatments must usually be shipped from the US or a comparably developed country. BioDelivery Sciences is a company that offers a way to reduce the shipping cost of essential drugs. The company has recently received its initial results from the phase one testing of Amphotericin B, an antifungal drug that must conventionally be shipped under special conditions and administered via injection. BioDelivery developed an encapsulated form of the drug. Solid drugs can be more easily packaged and shipped in bulk. Most importantly, patients can regulate their own intake of the drug safely without needing to contact a doctor for assistance. Within the second set of tests, Amphotericin B will be assessed for its effectiveness against **leishmaniasis** and **Chagas disease**, two of the fourteen neglected diseases. BioDelivery's methods could potentially be expanded to even more drugs in the future.

Focus of the Debate

The debate surrounding how to approach neglected diseases focuses around two separate points of disagreement. First, many people argue that it would be a **misallocation** of resources to focus on neglected diseases when the so-called “Big Three” diseases—malaria, tuberculosis, and HIV/AIDS—cause at least as many fatalities a year as all of the neglected diseases combined. This school of thought maintains that there is a limited amount of resources available to dedicate to medical research and the development of new medicines and that finding a cure for any of the Big Three—especially HIV/AIDS—would far outweigh finding a cure for any of the neglected diseases. Critics

Leishmaniasis—a disease caused by infection from a microorganism that causes open sores on the arms and legs.

Chagas disease—a disease caused by the infection from a microorganism; causes swelling in its early stage and heart disease or deformed intestines in its later stages.

Misallocation—to be distributed improperly or unwisely.

counter that neglected diseases are relatively simple to treat and require small investments relative to the Big Three. Despite generally agreeing that the Big Three should receive more funding, they see no reason why money cannot be dedicated to both groups of diseases. Lastly, they argue that better sanitation would help prevent neglected diseases as well as malaria and tuberculosis (and HIV/AIDS to a more limited degree).

The second point of disagreement centers around how treatments should be developed. It is important that pharmaceuticals receive compensation for the extremely expensive research process. However, treatments for neglected diseases are simply not profitable endeavors for these pharmaceutical companies because the populations requiring them live in poverty and often cannot afford the medicine. Some believe that by waiving patent protection, some already existent drugs could be provided at low cost to developing countries; however, critics charge that this violates the law and that it will **deter** future research efforts by pharmaceuticals who would fear that they might also lose their patent rights to the medicine. Others believe private and public funding could be sufficient to properly compensate pharmaceuticals. There are a variety of ideas, but they are all **contentious**.

Deter—to discourage or prevent from acting.

Contentious—likely to cause disagreement and controversy.

Questions for Policymakers

Note that the primary focus of the debate on neglected disease concerns how to establish a balance between long-term and short-term aid to the developing world. In a resolution, consider the time span it takes to develop the needed drugs in contrast to the time needed to improve the sanitary conditions in the developing world. A good plan will present a multi-tiered approach that effectively prioritizes short-term implementations, such as sanitation improvement and drug delivery, and long-term implementations, such as drug-discovery and infrastructure development. Remember to outline how to prevent future infection while also focusing on curing existing infections. Which diseases should be prioritized? Your measures should also provide a comprehensive plan for how you will encourage NGOs and private organizations to respond to neglected diseases.

Conclusion

Today, some of the world's most widespread diseases go almost entirely untreated. Poor sanitary conditions and limited treatment options have crippled the ability of the world's poor to deal with these infections. While the developed world has stood **blissfully** ignorant to the situation for several decades, it has begun to vigorously respond to the need for medicine and sanitary living conditions in the rest of the world.

Blissfully—marked by happiness and a lack of serious concern.

Much more work, is still needed. With major drug companies only recently renewing their efforts to treat neglected diseases, effective drugs are still nearly a decade way from the market. Considerably heated debate still **ensues** over how much money should be diverted from researching cures to more publicized diseases like AIDS, malaria, and tuberculosis to focus on neglected diseases. As a result, it is critical to respond to this issue now with the resources that already exist to combat these neglected diseases.

Ensnue—to take place as a result of something else.

Bibliography

“BioDelivery Sciences Announces Initial Results of Phase 1 Clinical Study of Bioral Amphotericin B.” *Business Wire*. 20 January 2009 <http://www.businesswire.com/portal/site/google/?ndmViewId=news_view&newsId=20090205005368&newsLang=en>

McNiel, Jr, Donald G. “Gates Foundation Gives Millions For Coverage of World Health.” *The New York Times: Science*. 9 December 2008 <<http://www.nytimes.com/2008/12/09/health/09glob.html>>

“Red Cross Adopts HU Cholera Prevention Program Developed by Hebrew U Students.” *Canadian Friends of the Hebrew University of Jerusalem*. 14 August 2008 <<http://www.cfhu.org/node/529>>

“WHO IP and Health Meeting Closes.” *Pharma Marketletter*. 19 November 2007 <http://www.accessmylibrary.com/coms2/summary_0286-33481718_ITM>