

## Falling Short: America's Investment in Global Health

America's investment in medical research has led to astounding advances. Research conducted by or funded through government agencies like the National Institutes of Health (NIH) has improved the health and quality of life of Americans and people worldwide. Over the last 30 years, death rates from cardiovascular disease and stroke have declined by 63 and 70 percent respectively, much of that due to medical advances that grew out of NIH research. NIH-funded research has also led to improved outcomes for the millions of Americans with cancer, and it has decreased the chances that those with diabetes will go blind because of their illness.

But medical research and its associated advances have not been evenly spread across all disease categories. When it comes to diseases that are most prominent in developing nations, our investment falls short. It falls short given the magnitude of the problem, and it falls short given the potential benefits to Americans and people around the world.



*Photo courtesy of Pan American Health Organization*

### The Need Is Great

Malaria, HIV/AIDS, and tuberculosis (TB) account for the deaths of 6 million people every year. And one in six people worldwide are at risk of infection from a group of diseases collectively referred to as "neglected tropical diseases" — a term used because so little attention has been paid to their treatment and eradication.

When it comes to preventing or treating these diseases, there are huge gaps in the medical tools available. The money we spend researching and developing new medical interventions to treat these conditions is meager compared to their human and economic toll.

## ■ Malaria

Malaria infects 300-500 million people annually, roughly the combined populations of the U.S., Canada, and Mexico. It is the leading cause of death among children under the age of five in Africa.<sup>1</sup> In many parts of the world, older treatments are no longer effective, and new treatments are unaffordable. There is no vaccine. An estimated \$1 billion per year is needed globally to accelerate the development of a vaccine and better treatments.<sup>2</sup>

**NIH spends \$98 million—less than 1 (0.4) percent of its total budget—on malaria research.<sup>3</sup>**

## ■ HIV/AIDS

More than 39 million people worldwide are living with HIV/AIDS. Every year, about 4 million people become newly infected with HIV,<sup>4</sup> and every day, 12,000 people lose their lives to the disease.<sup>5</sup> Preventing new infections through a vaccine and through other preventive strategies, such as using microbicides, is the most effective way to turn the tide against this devastating disease. It is estimated that between \$1.1 and \$1.2 billion is needed annually to speed the search for a safe, effective HIV vaccine, and \$280 million is needed annually over the next five years to accelerate the development of a microbicide.<sup>6</sup>

**NIH spends just \$654 million—2 percent of its budget—on vaccines and microbicides combined.<sup>7</sup>**

## ■ Tuberculosis

About 14.6 million people have active TB, and every year, an additional 9 million people are infected.<sup>8</sup> New TB strains that are resistant to all available treatments are on the rise. The current diagnostics, treatments, and vaccine are all inadequate, particularly for use in developing countries. An estimated \$9 billion is needed over the next 10 years to accelerate the development of new anti-TB tools.<sup>9</sup>

**The NIH reports that it spends \$150 million—less than 1 (0.6) percent of its total budget—on TB research.<sup>10</sup>**

## ■ Neglected Tropical Diseases

A billion people worldwide are affected by so-called “neglected tropical diseases” (NTDs). These diseases include African trypanosomiasis (sleeping sickness), American trypanosomiasis (Chagas disease), and lymphatic filariasis. They render millions of people weak, blind, disabled, and unable to participate in school or work.<sup>11</sup>

The amount of money that is currently spent on neglected tropical diseases overall, and estimates of how much money is needed for research on these diseases, are not available. However, data on some of these diseases do indicate that the total amount spent is strikingly inadequate. For example, spending on the development of a drug to treat African trypanosomiasis, a disease that affects half a million people annually, is only about \$4 million.<sup>12</sup> For Leishmaniasis, which strikes more than 1 million people every year, total global research spending was \$20 million, and only 15-20 percent of that total was spent directly on drug development.<sup>13</sup>

**In its 2007 estimates of funding for each disease and research area, NIH did not report its spending on neglected tropical diseases.**

## Why Should We Invest in Global Health?

Why should America, with an aging population and health care issues of its own, invest more money in global health? Because investing to improve the health of the world's people is not only the right thing to do, it is also in our best interest.

### ■ Global Health Affects America's Health

Diseases don't respect borders. Infectious diseases that originated elsewhere have arrived here before and will again.<sup>14</sup> Such diseases include SARS, HIV/AIDS, and West Nile Virus, to name only a few. And the risk posed by infectious diseases increases with globalization. Every year, 60 million Americans travel abroad, and 50 million people from other countries travel to the U.S.<sup>15</sup> These exchanges, coupled with increased international trade, carry the risk of transmitting infectious diseases.

Animals and food that enter this country can bring disease with them as well. We are importing agricultural and animal products in higher volumes with more frequency than ever before. In the last decade alone, agricultural imports into the U.S. have doubled.<sup>16</sup> As ships deliver goods around the world, they can bring with them "disease vectors" — the insects that carry many infectious diseases.<sup>17</sup> Globalization has connected the U.S. to potential pathogens from around the world.<sup>18</sup>

This increased trade and interaction has many positive aspects that we cannot and should not halt. But we jeopardize our health if we ignore scientific research into diagnostics, treatments, preventive measures, and cures for diseases just because we think of them as occurring "somewhere else."

### ■ Addressing Global Health Issues Has Economic Benefits

Globalization also brings economic interdependence. Economic progress or decline in one country can have ripple effects. We easily recognize this where global financial markets are concerned. With the 1997 East Asian financial crisis, for example, governments around the world reacted quickly, recognizing that the financial crisis could spread. Health crises can have economic reverberations worldwide as well.<sup>19</sup>

Health and economic growth are linked. This was clearly demonstrated in Mexico, where improvements in health from 1970 to 1995 accounted for an estimated one-third of the country's long-term economic growth during that period.<sup>20</sup> But in countries where millions of people in their prime earning years are dying from or disabled by disease, economic growth is stalled or reversed.<sup>21</sup> Malaria alone accounts for \$12 billion in lost gross domestic product (GDP) annually across Africa. And the U.S. National Intelligence Council predicts that "AIDS and malaria alone will reduce gross domestic product in several sub-Saharan African countries by 20 percent or more by 2010."<sup>22</sup> HIV/AIDS also threatens recent economic gains in India and China.<sup>23, 24</sup>

The economic growth of developing countries matters to America. These countries are important trading partners, accounting for 45 percent of U.S. exports.<sup>25</sup> Advancing health improvements in these countries can, in turn, advance their economies, making them even better trading partners. Economic advances can also reduce the need for U.S. foreign aid,<sup>26</sup> a benefit for developing countries and for America.

### ■ Global Health Affects American Security

The U.S. Department of Defense, National Intelligence Council, and Central Intelligence Agency (CIA) have all recognized the connection between global health problems and national security. In countries with a heavy disease burden, economic growth is slowed. Death and disease lead to disruptions in social structure. This can weaken social institutions, exacerbate existing conflicts, and destabilize states.<sup>27</sup>

HIV/AIDS poses the greatest threat to stability, particularly in hard-hit areas in Africa. This matters to U.S. security. Africa is an area of growing strategic and economic importance to the U.S. — the continent will account for up to 25 percent of U.S. energy imports in the next decade.<sup>28</sup>

■ **Investing in Global Health Can Improve Our International Relations**

Helping to lead advances in health in developing countries can be a powerful diplomatic tool. Training physicians; building research capacity; and conducting research that leads to the development of new treatments, vaccines, and other medical advances can all be important parts of a long-term foreign policy strategy. Recently, Joseph Nye, former Assistant Secretary of Defense, explained that American policies, whether in connection with fostering development or combating AIDS, can help counter negative characterizations of the U.S. and “brand” America in a positive way that will attract allies and assistance.<sup>29</sup>

■ **The Rewards Can Be Substantial**

Historically, U.S. investments in global health have paid off.

For example, the worldwide eradication of smallpox in 1979 enabled the U.S. to discontinue expensive prevention and treatment efforts. Even conservative calculations indicate that the eradication of smallpox has provided concrete economic returns to the world, estimated at \$1 to \$2 billion annually.<sup>30</sup>

The polio vaccine is another example of successful U.S. investment in global health. During the early 1950s, there were about 16,000 paralytic polio cases and 1,800 deaths from the disease annually. Today, there are fewer than 100 cases annually, and every dollar spent to administer the vaccine saves \$3.40 in direct medical costs and \$2.74 in indirect societal costs.<sup>31</sup>

In the years before the measles vaccine was available, an average of 500,000 cases of measles were reported each year. Today, it is estimated that every dollar spent to purchase the measles vaccine saves \$10.30 in direct medical costs and \$3.20 in indirect societal costs.

Today, there are a thousand times more malaria cases than there were measles cases before the measles vaccine was available worldwide. The payback from an effective AIDS, TB, or malaria vaccine could be enormous.

■ **Sometimes, the Rewards Can Be Surprising**

Sometimes, research on global health issues leads to treatment advances in the U.S. Examples includes the following:

- Thirty years ago, American-trained physicians looking to cure diarrhea infections that were common in the world's poorest regions found a treatment that has since saved the lives of about 40 million children worldwide. This discovery

also laid the foundation for a drug commonly used by parents in the U.S. under the brand name Pedialyte.<sup>32</sup>

- The concept behind America's community health centers, a key health care resource for people living in underserved communities, was based on a community-based health care system developed in South Africa to help improve the health of the Zulu people.
- Many studies focused on combating HIV/AIDS in developing countries can have immediate applications in the U.S. A recent NIH-funded U.S.-Tanzanian study found that a particular regimen of multivitamins given to HIV-positive pregnant women could reduce their progression to AIDS by 50 percent. This had implications for the use of vitamin regimes among HIV-positive pregnant women in the U.S.

#### ■ **Filling the Gap Helps Others – and Ourselves**

We can help improve lives in other countries – and advance our own health, economic, diplomatic, and security interests – by stepping up to help fill the gap between the resources currently provided and the resources needed to address pressing global health issues.

America can improve global health by drawing on our scientific strength and leadership and investing in research and development for medical advances targeting health problems that currently affect millions around the world, and that could someday affect us.

We have the tools. The National Institutes of Health is the world's largest biomedical research institute, and it has the capacity to fund research at all stages, from basic science through clinical testing. The Centers for Disease Control and Prevention (CDC) and the U.S. Agency for International Development (USAID) can support testing for new technologies to help move promising medical advances into practice.

These agencies have the capacity to move forward the scientific advances that address the most serious global health challenges of our time. Yet more funding is needed. More funding is needed for NIH, which has seen its inflation-adjusted funding fall every year since 2004.<sup>33</sup> And more funding is needed generally for global health research and development to move products from research into practice.<sup>34</sup>

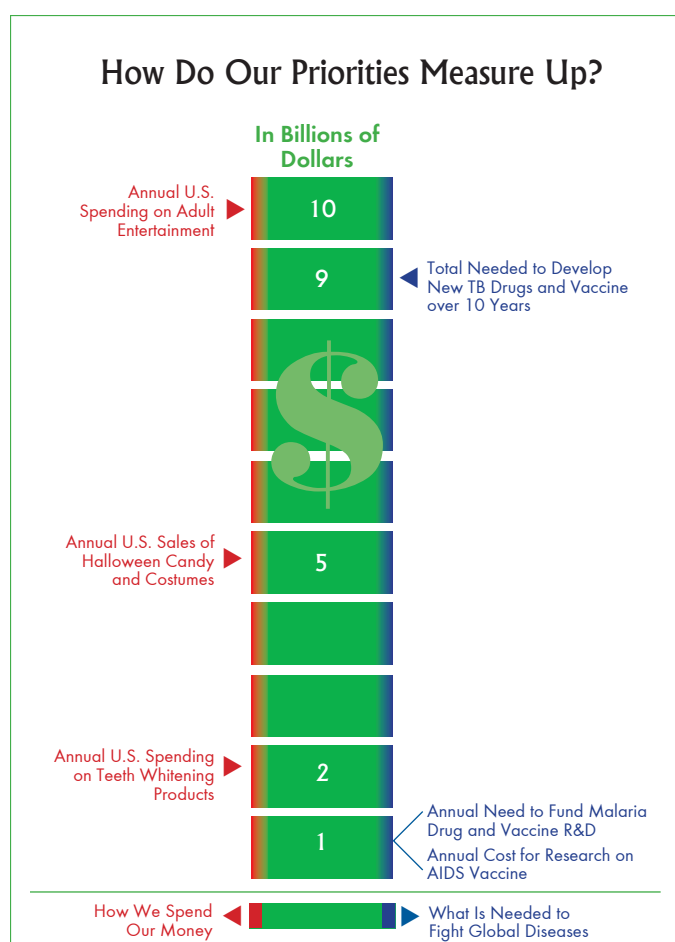


## A Large but Not Impossible Challenge

The suffering and deaths caused by diseases such as HIV/AIDS, TB, and malaria are devastating. But the situation is far from insurmountable.

When put in perspective, the amount needed to adequately fund global health research is small. For example:

- Last year, the total amount of money spent on TB research was \$150 million, or 0.5 percent of the total NIH budget. It is estimated that we could make significant inroads in the fight against TB if the global community pooled its resources and spent \$9 billion over the next 10 years on TB research. While this might sound like a large number, it is helpful to keep in mind that last year, Americans spent \$5 billion on Halloween-related festivities—30 times the amount the U.S. spent on all TB research.<sup>35</sup>
- It is estimated that between \$1.1 and \$1.2 billion is needed annually to speed the search for a safe, effective HIV vaccine, and \$280 million is needed annually over the next five years to accelerate the development of a microbicide.<sup>36</sup> In contrast, NIH spends just \$654 million—2 percent of its budget—on vaccines and microbicides combined. While \$1.1 billion might seem like a high price tag, consider that every year, Americans spend more than twice as much on teeth whitening products.<sup>37</sup>



In a budget environment where competing interests fight for every dollar, investment in health research has a proven track record. The price is small, but the potential rewards are enormous.

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*"In our mobile, interdependent, and interconnected world, threats arising from emerging and epidemic-prone diseases affect all countries . . . . This universal vulnerability creates a need for collective defenses and for shared responsibility in making these defenses work."*

- Dr. Margaret Chan, Director-General of the World Health Organization

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## Endnotes

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<sup>3</sup> *Estimates of Funding for Various Diseases, Conditions, Research Areas* (Bethesda, MD: National Institutes of Health, last updated February 5, 2007), available online at <http://www.nih.gov/news/fundingresearchareas.htm>, accessed on July 31, 2007.

<sup>4</sup> Joint United Nations Programme on HIV/AIDS (UNAIDS), *2006 Report on the Global AIDS Epidemic* (Geneva: World Health Organization, 2006).

<sup>5</sup> Families USA derived this number by dividing the total number of annual HIV deaths by 365.

<sup>6</sup> *Adding It All up: Funding for HIV Vaccine and Microbicide Development, 2000 to 2005* (HIV Vaccines and Microbicides Resource Tracking Working Group, August 2006); Coordinating Committee of the Global HIV/Vaccine Enterprise, "The Global HIV/AIDS Vaccine Enterprise: Scientific Strategic Plan," *PLoS* 2, no. 2 (February 25, 2005): e25.

<sup>7</sup> *Estimates of Funding for Various Diseases, Conditions, Research Areas*, op cit.

<sup>8</sup> *Tuberculosis Fact Sheet 104* (Geneva: World Health Organization, March 2006), available online at <http://www.who.int/mediacentre/factsheets/fs104/en/index.html>.

<sup>9</sup> STOP TB Partnership and World Health Organization, *The Global Plan to Stop TB, 2006-2015* (Geneva: World Health Organization, 2006); Cindra Feuer, *Tuberculosis Research and Development: A Critical Analysis* (New York: Treatment Action Group, October 2006).

<sup>10</sup> *Estimates of Funding for Various Diseases, Conditions, Research Areas*, op cit.

<sup>11</sup> This increase of \$350 million per year would bring research on parasitic tropical diseases to the same rate as that for malaria in terms of dollars spent per disability-adjusted life year affected (DALY). Current research spending on NTDs is less than \$1 per DALY, whereas the amount spent for malaria is \$6.20 per DALY.

<sup>12</sup> Medecins Sans Frontieres, Access to Essential Medicines Campaign and Drugs for Neglected Diseases Working Group, *Fatal Imbalance: The Crisis in Research and Development for Drugs for Neglected Diseases* (Switzerland: Medecins Sans Frontieres, September 2001).

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<sup>15</sup> ITA (International Trade Administration), Office of Travel and Tourism Industries, "Total International Travelers Volume to and from the U.S. 1995-2005," available online at [http://tinet.ita.doc.gov/outreachpages/in-bound.total\\_intl\\_travel\\_volume\\_1995-2005.html](http://tinet.ita.doc.gov/outreachpages/in-bound.total_intl_travel_volume_1995-2005.html).

<sup>16</sup> U.S. Census Bureau, *2007 Statistical Abstract of the United States: Agricultural Exports and Imports-Value 1990 to 2005* (Washington: U.S. Census Bureau, 2007).

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<sup>18</sup> Institute of Medicine, *Addressing Foodborne Threats to Health: Policies, Practices, and Global Coordination* (Washington: Institute of Medicine, September 15, 2006).

<sup>19</sup> Ruth Levine, "A Cure for the Asian Flu," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science* 4, no. 3 (2006): 228.

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