

The Vital Case for Global Health Investments by the US Government

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Global health received little specific attention during the 2016 US presidential campaign. As a candidate, our 45th president had expressed his views vis-à-vis the appropriate US role in the international sphere [1], but global health was not highlighted. Key executive branch positions that influence global health policy and investments include the directors of the Office of Global AIDS Coordinator, the US Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), and the Office of Global Health in the Department of Health and Human Services, among others. As these positions are filled in early 2017, global health policy may be clarified. The Infectious Disease Society of America (IDSA) sponsors a Center for Global Health Policy that receives support from the Capital for Good Advocacy Initiative [2]. The center's Advisory Committee and IDSA's Global Health Committee have argued that global

health investments represent a major opportunity to advance core interests of the United States and, at the same time, to improve the lives of millions around the world. At least 4 central tenets, which are described here, are at the heart of this global health engagement perspective.

EFFICIENCY OF DISEASE CONTROL IS MAXIMIZED BY EARLY RESPONSE

Time and time again, microbes have emerged in tropical and/or impoverished parts of the globe, threatening North America as travelers visit our continent and as Americans travel overseas. The severe acute respiratory syndrome (SARS) epidemic of 2002–2004 entered Canada from Asia [3], incurring global costs of the pandemic that were estimated at \$30–100 billion. Had the condition been identified early in 2002 and controlled in Hong Kong and Guangdong Province, China, massive economic savings would have accrued both in Asia and also around the world; lives would have been saved, including in North America in 2003. Similarly, from 2013–2016 the Ebola virus epidemic in West Africa killed more than 11 000 persons, including the death of an American in Texas in October 2014 [4]. While Ebola virus was not widespread in North America, its direct costs for core Ebola treatment centers in the United States alone was at least \$54 million [5], with total costs likely

many times this for health department expenditures, screening and quarantine, and travel restrictions. In the 3 most afflicted nations—Liberia, Sierra Leone, and Guinea—Ebola virus costs are estimated at \$82 to \$356 million, a vast cost for those low-income nations and for the international donor community [6]. Other estimates suggest that the United States, in total, spent more than \$1 billion on the entire Ebola response. These costs were so high because the health infrastructures of these 3 nations were so poor, reflecting a lack of investments in prevention and care. The strengthening of health systems has long-term benefits for the United States by helping countries to better respond to chronic and emergent health challenges. In 2016, Zika virus emerged in the United States and notably in Puerto Rico; costs for Zika virus prevention for the mainland are mounting through maternal and child screening, vector control, protection of the blood supply, and epidemic preparedness [7–10]. Infectious disease experts are of one mind that prevention at root sources is most cost effective in the long run and more effective and ultimately cost efficient than coping with pandemic spread, while addressing fundamental humanitarian concerns. Waiting until the United States is affected directly to deal with emerging or imported diseases guarantees that the ultimate costs balloon with increased complexity of disease control.

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PROTECTION OF OUR CITIZENS

The field of tropical medicine was grounded in colonial traditions designed to protect expatriates and local workers in tropical colonies of Western nations. In a post-colonial world, high-income nation travelers go abroad for business, pleasure, mission work, diplomacy, and military purposes. American expatriates serve our government, nongovernmental organizations, universities, businesses, religious institutions, and overseas interests. American businesses employ overseas workers and depend on their good health to maintain productivity and local goodwill. Whether for prevention, disease control, or medical care, global health investments protect these transient and long-term overseas denizens. Hence, prevention with vaccines, insect repellents, prophylactic or curative drugs, and travel advice are all helpful. However, even more impact accrues with control of diseases in the countries being visited, benefiting our citizens and the local inhabitants at the same time. In addition to protecting the health of individuals is a need to protect the environment. Waterborne, foodborne, and respiratory diseases caused by microbial or toxic sources can be quite indiscriminant as to who is affected. How climate change mitigation improves the environment and reduces adverse health consequences is the topic of intense investigation, but indicators to date are adverse for a wide variety of conditions that global warming is [11–16]. Climate change and health have been a particular focus of John Holdren, the longest-serving presidential science adviser in US history (2009–2017). In mid-2016, Dr Holdren observed the following: “The United States would become a pariah if we backed out of the Paris [climate] agreement. ... [Mr Trump] would discover that what he said during the campaign about Paris is not quite right. He said ... that the Paris agreement means that foreign bureaucrats would be able to determine America’s energy choices. That simply isn’t true. It’s far from true. If he is elected, he’ll figure that out, and I think

he ... will stick with the Paris agreement” [17]. Holdren’s prediction of a change in heart from the new president may or may not be validated; the proposed head of the Environmental Protection Agency doubts that climate change is occurring or, if it is, that it is due to human action, while, in contrast, the secretary of state has supported the Paris climate accords.

NEED FOR GLOBAL HEALTH RESEARCH

Global health research is a good investment for the US public sector for several reasons. A given disease or condition may be more common overseas such that the research can be done more quickly and cheaply than it could be done in the United States, as with human immunodeficiency virus (HIV), dengue virus, and respiratory syncytial virus vaccines, and prevention strategies. Even if a research target does not occur at all in the United States, its study may be of importance to US interests, as with malaria and the US military, travelers, and expatriates. When a question may be of little consequence to the health of Americans, it may be of importance to defined global subpopulations whose interests we seek to protect, as with bartonellosis, leptospirosis, and human T-cell lymphotropic virus type 1 (HTLV-1). An additional argument for global health research is that discovery related to one disease may lead to fundamental scientific insights into other diseases, as was the case in the discovery of HIV after insights derived from HTLV-1 and feline leukemia virus retrovirus research. We still do not know all the factors that cause certain cancers, neuromuscular diseases, mental disorders such as Alzheimer’s disease, and even diabetes and cardiovascular diseases, some of which may be triggered by infectious agents. Two of dozens of potential examples are the studies of Huntington’s disease and Alzheimer’s disease from Latin America that uncovered hitherto unknown genetic risk factors, far beyond what had been learned from US studies alone [18, 19]. Coevolution

of *Helicobacter pylori* strains with human genetic clusters was discovered overseas, providing new insights into gastric cancer disease pathogenesis [20]. Global competitive pressures in the biotechnology, pharmacology, and biomedical engineering arenas also demand a compelling research presence in international settings, given the need to improve the efficiencies and generalizability of clinical trials and product development.

USE OF “SOFT POWER” FOR DIPLOMACY TO AVOID AND CONFRONT HUMANITARIAN CRISES

Journalists, photographers, novelists, and filmmakers alike have documented the hopelessness, desperation, and sometimes homicidal anger generated by the preventable loss of a loved one to disease or accident. Perception of the United States, the world’s wealthiest nation, failing to respond to the challenges of global disability, disease, and death can fuel anti-US sentiments and complicate any and all foreign affairs in economic, business, and political realms. The United States can win friends and influence governments by providing technical and concrete financial support for disease control and prevention, enabling healthy pregnancies through birth spacing and contraception, and reducing environmental hazards, to name but a few contributions now made through USAID. Nelson Mandela stated in January 2009, “Amidst all of the human progress made over the last century, the world in which we live remains one of great divisions, conflict, inequality, poverty and injustice. Amongst many around the world a sense of hopelessness had set in as so many problems remain unresolved and seemingly incapable of being resolved. ... we can in fact change the world and make of it a better place [21].” It is not in the US character to ignore humanitarian crises, whether fueled by drought, famine, war and civil unrest, global climate change, pestilence, or natural disaster. Strengthening overseas health systems ultimately weans nations from donor-nation dependencies [22]. Global trainees

supported by the United States are typically friends and collaborators for life of US universities and agencies such as the NIH, CDC, and USAID. Enlightened policies to help prevent and/or to rapidly respond to such emergencies can enable US leadership in low- and middle-income nations whose support the United States needs for a wide swath of diplomatic, military, and business relationships.

Improved health can lead to greater political stability, which can in turn result in greater economic development, local buying power, and opportunities for US business and trade. Sometimes, but not always, health investments ultimately save money of host and/or donor nations [23–28]. A more isolationist United States vis-à-vis the great health challenges that loom beyond our borders can let such cross-national diseases into our nation, as with pandemic influenza and multiple drug-resistant tuberculosis, when they could be controlled instead in the country of origin. Control of global disease threats mandates the training of a cadre of US and international researchers, surveillance and disease control experts, and specialists from a wide array of health management, communications, social and behavioral science, biomedical, human rights, and policy areas. Such trainees are every bit as important to national security as are our future leaders in military, diplomatic, international business, security, and other spheres [29–37]. Positive health engagement can enable other critical interactions by building the goodwill essential for effective competition and cooperation on a world stage. Confronting global health challenges is good for the soul of America and is good for US business and diplomacy at the same time.

Notes

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