TESTIMONY

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"The Continuing Threat of Neglected Tropical Diseases"

Subcommittee on Africa, Global Health, Global Human Rights, and International Organizations
Committee on Foreign Affairs
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Good afternoon, Chairman Smith and Members of the Subcommittee. My name is Peter Hotez, I'm a physician-scientist, founding Dean of the National School of Tropical Medicine at Baylor College of Medicine, and President and head of the Sabin Vaccine Institute and Texas Children's Hospital Center for Vaccine Development, where we develop and test new vaccines for neglected tropical diseases. For this year I am also serving as United States Science Envoy, also focusing on neglected disease vaccines.

I appreciate the opportunity to speak with you today and will focus my remarks on the very important conditions known as the neglected topical diseases or "NTDs." Working with the Institute of Health Metrics in Seattle we have just determined that practically every single person living in extreme poverty is affected by at least one NTD, many of which are chronic and debilitating parasitic conditions such as ascariasis – which affects 819 million people, hookworm infection – 440 million, schistosomiasis – 252 million, river blindness 30 million, Chagas disease 7-10 million. Almost every person living in poverty has at least one of these NTDs, which I sometimes refer to as "the most important diseases you never heard of." We're about to publish a "Worm Index" for human development linking NTDs as an actual cause of poverty because it makes them too sick to go to work or because it reduces childhood cognition. The NTDs are one of the stealth reason why the bottom billion – the estimated 1.2 billion people living on less than a dollar a day - cannot escape poverty.

Although today Ebola virus infection is perhaps the best known infectious disease in fact it remains one of the rarest. For example in the three major Ebola-affected countries of West Africa – Guinea, Liberia, and Sierra Leone – where 22 million people live, there were

approximately 20,000 cases of Ebola, roughly 0.1% of the population. However, our numbers soon to be published in the *Public Library of Science* indicate that almost one third of the population of those three countries – more than five million people - are affected by either hookworm infection or schistosomiasis, or both, resulting in severe and incapacitating anemia and other sequelae.

NTDs are not restricted to the poorest countries of Africa. Because poverty is the overriding determinant, these diseases can also be found among the extreme poor living in wealthy countries, including the United States where an estimated 20 million people live in extreme poverty and 1.65 million families live on less than $2 per day. Throughout the month of October of 2014, I appeared regularly on MSNBC, Fox News, or Bloomberg TV for my opinion about if and when Ebola will spread throughout Texas and the United States. My answer was always, there is no risk of Ebola taking foothold in the US. But we do have 12 million Americans living in extreme poverty, mostly in the southern US (including Texas and the Gulf Coast) who are affected by at least one NTD, including Chagas disease, toxocariasis, and cysticercosis. The anchors would always respond by saying, "thank you doctor, but we're out of time." NTDs continue to represent our nation's most glaring and ignored health disparity issue.

Let me briefly summarize what's working and what's not working globally, but also here in the US, to control and eliminate the world's most serious NTDs.

First, a very important achievement has been the scale up of mass treatment packages of donated drugs, which we first proposed in partnership with the World Health Organization in 2005. Today, this approach is in operation in more than two dozen less developed countries, and

is actually leading to the elimination of two key NTDs of major global importance – lymphatic filariasis and trachoma.

We certainly applaud the commitment of the United States to the U.S. Agency for International Development (USAID) NTD Program, which over the past eight years has improved the lives of over 460 million people, delivered more than 1 billion NTD treatments, and trained over 500,000 community workers. This successful public- private partnership with leading pharmaceutical companies has exceeded expectations in its ability to deliver treatments for the seven most common NTDs (which make up the bulk of the global NTD burden) and leveraged more than $6.7 billion worth of donated medicines in 25 targeted countries, including Bangladesh, Indonesia, Nigeria, and Sierra Leone.

In addition, tremendous global progress has been made in tackling NTDs since the announcement of the London Declaration on NTDs in 2012—a partnership which includes the United Kingdom, the Bill & Melinda Gates Foundation, 13 pharmaceutical companies, the United States and many others. In 2013, more than 1.35 billion treatments were supplied by pharmaceutical partners alone and by the end of 2014, more than 70 endemic countries had developed multi-year integrated NTD control plans (nearly a 50% increase since 2012). NTD partners continue to use a comprehensive London Declaration Scorecard to promote accountability, transparency, and evidence-based prioritization. The 10 NTDs highlighted in the London Declaration should also remain as a main focal point in any future NTD legislation.

Despite the progress, however, significant funding gaps to implement comprehensive NTD control and elimination programs remain. And, without continued support by existing partners, like the United States, as well as redoubled efforts to attract new bilateral partners, a

major scale up of implementation efforts, and increased global resources, we will not achieve the WHO 2020 target goals endorsed by the London Declaration partners. **It is estimated that the annual global funding gap is over $220 million per year.**

That is why, we were disappointed to see the President's proposed budget request for USAID's NTD Program for fiscal year (FY) 2016 at $86.5 million (a $13.5 million decrease from the FY 2015 enacted level of $100 million) and urge Congress to increase funding for NTDs from $100 million to $125 million. This additional $25 million will allow USAID to further maximize the benefits of increased drug donations received from pharmaceutical companies, conduct impact assessment surveys to measure progress, and increase the impact of this successful public-private partnership.

The Subcommittee should also consider the inclusion of NTD control/elimination measures within other USAID programs or among broader U.S. government foreign assistance programming. Opportunities for cross-sectoral coordination may include maternal and child health services delivery platforms (e.g., childhood immunizations, vitamin supplements), water, sanitation and hygiene programs, as well as food security or nutrition initiatives. I am also concerned that NTDs are still not a component of large-scale programs to combat HIV/AIDS, such as PEPFAR and the Global Fund despite evidence that 20-150 million girls and women in Africa suffer from female genital schistosomiasis, which increases susceptibility to HIV/AIDS and represents a major co-factor in Africa's AIDS epidemic.

In parallel with these global public health control measures, there is an urgent need to support research and development (R&D) for new and improved drugs, diagnostics, and vaccines

for NTDs. As head of the non-profit Sabin product development partnership, we have developed two critically important NTD vaccines, one for hookworm infection and the other for schistosomiasis, which are now undergoing clinical testing in Brazil, Gabon, and in the United States. We also have new vaccines for Chagas disease, leishmaniasis, and other NTDs at earlier stages of development. Greater U.S. investment in NTD-related R&D is also needed to support the introduction of these new technologies as a means to ensure the achievement of the goals of disease control and elimination. People who live in poverty deserve more than the access to essential medicine, they deserve access to innovation. I previously proposed setting aside 1-2% of the US commitment to global health for the development of new drugs, diagnostics and vaccines, which would pump $100-200 million new dollars into the system for NTD product development. Yet, these R&D efforts must not come at the expense of accelerating the success of the existing integrated NTD Program at USAID. That approach would undercut the positive gains that have resulted from the millions of dollars the United States has invested in NTD treatment programs since FY2006, and risk condemning hundreds of millions of the world's poor to lives plagued by NTDs and a loss of economic potential.

We also need these new vaccines and other countermeasures in preparation for new catastrophic NTD outbreaks such as the one that hit West Africa in 2014-15. It is important to note that Ebola emerged in Guinea, Liberia, and Sierra Leone, not primarily because it was tropical, although maybe that was a component, but instead mostly it was because these countries have only recently emerged out of horrific civil wars lasting for years and completely depleting their public health infrastructure. I often point out that this link between conflict, post-conflict and cataclysmic NTDs is not new. We saw it during the 1970s in Angola and Congo when civil

wars there prevented sleeping sickness control measures that resulted in more than 500,000 people dying from that NTD, also known as African trypanosomiasis (50 times more than the recent Ebola epidemic), later in the 1980s when the civil war in Sudan forced human migrations that resulted in 100,000 deaths from an NTD known as kala-azar. In this sense Ebola is V.3.0 of a decades' long history of "conflict linked to contagion."

In my role as US Science Envoy I am preparing for V.4.0, which I believe will be horrific NTD outbreaks coming out of ISIS occupied Syria and Iraq, or possibly Libya and Yemen. We are already beginning to see glimpses of this through resurgence of polio and measles outbreaks among refugees spilling across the border into Jordan, Lebanon, and Turkey, as well as outbreaks of leishmaniasis, hepatitis, and others. Unfortunately, the Middle East and North African region has almost zero capacity for developing new vaccines for these diseases and I am working with the U.S. government to look at selected countries such as Morocco, Saudi Arabia, and Qatar, to potentially build a facility that resembles our Sabin-Texas Children's vaccine institute in Houston, in order to produce vaccines for NTDs such as leishmaniasis, and also the MERS coronavirus.

Finally, a comment about NTDs in the United States. Last year in the *Public Library of Science* I estimated that 12 million Americans live with at least one NTD. They include toxocariasis a larval worm infection linked to deficits in cognitive development that affect almost one in five African Americans living in poverty. In a paper I wrote in *JAMA Psychiatry* I asked whether toxocariasis could be partly responsible for the achievement gap noted among socioeconomically disadvantaged students. At our National School of Tropical Medicine in

Texas we are finding unique modes of transmission of Chagas disease - a parasitic disease that causes debilitating and life-threatening heart defects – among hunters and campers in our state. A key point is that many, if not most of these NTDs, are not being imported through immigration. Instead, we are finding transmission among the poor, especially in the American South. We urgently need to better determine the number of Americans at risk for these NTDs, through better and more comprehensive surveillance, and also develop improved and point-of-care diagnostics, as well as new drugs and vaccines. The U.S. needs a Center of Excellence based in the southern United States supported by the U.S. Department of Health and Human Services that will specifically address diseases such as Chagas disease and toxocariasis.

We, therefore, urge support for the re-introduction of H.R. 4847, the End Neglected Tropical Disease Act—legislation introduced by Congressman Smith and co-sponsored by Rep. Matt Salmon, Rep. Gregory Meeks, and Rep. Hank Johnson in the 113th Congress, which addresses both NTDs abroad as well as NTDs emerging in the United States. The NTDs are devastating populations living in poverty and conflict everywhere and I appreciate the opportunity this Subcommittee has given to speak on this issue. I now look forward to your questions. Thank you!

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