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Thank you Chairman Smith, Chairman Duncan, Ranking Member Bass, Ranking Member Sires and distinguished members of the Subcommittees for inviting me here today to testify on the response of the U.S. Agency for International Development (USAID) to the Zika virus outbreak. I want to thank you for your continued leadership and commitment to global health and global development issues. We see you as partners in USAID's mission to end extreme poverty, and promote resilient, democratic societies while advancing our security and prosperity.

On Monday, the President announced his intent to submit a Fiscal Year 2016 supplemental request to aggressively respond to the Zika virus outbreak. USAID is included in this request so that we can help countries affected by the Zika virus respond and protect their citizens. In my testimony today, I will describe what USAID is prepared to do with existing and supplemental resources to respond as part of an interagency effort, discuss Zika within the context of the challenges of infectious diseases and the, and share what we and other partners are doing to help countries around the world prevent, detect and respond to infectious diseases.

A serious concern

On February 1, the World Health Organization announced that the recent cluster of microcephaly and other neurological disorders reported in the Americas constitutes a Public Health Emergency of International Concern. There is a temporal association between this cluster and Zika virus disease outbreaks in this region. This cluster of microcephaly cases is not only devastating for the affected children and their families but it also raises many questions for pregnant women and their families across the Americas.

Zika was first identified in Uganda in 1947, and has been found to cause illness in Africa and Asia, before the recent outbreaks in Latin America. But, our knowledge of the virus and its relationship to the microcephaly cases has many gaps and studies are underway to better understand the morbidities caused by the virus.

However, it is important to recognize that national surveillance systems, laboratory capacity, and preparedness across the developing world are insufficient to deal with the influx of new and emerging pathogens. It is estimated that of the 194 countries committed to International Health Regulations, only 35 percent are fully prepared to detect and respond to pandemic threats.

USAID, working with our interagency and international partners is working to address this through many of our existing programs. In addition, there are also tools, albeit limited, at our disposal to slow the transmission of Zika virus by the *Aedes Aegypti* mosquito. Vector control of adult *Aedes aegypti* is difficult to do correctly and is labor- and cost-intensive. We need new tools and enhanced capacity.

Proposed activities

Today you will hear from my colleagues at the Centers for Disease Control and Prevention as well as the National Institutes of Health, about their efforts to develop new tools and diagnostics to address this virus. USAID is uniquely positioned to take these new tools and techniques and apply them to the Zika virus outbreak. The FY 2016 supplemental request for the Zika virus includes $335 million for programs to be implemented by USAID. Building on lessons learned from Ebola, USAID will roll out communication/behavior change campaigns in association with our CDC, WHO/PAHO and local partners; support community implementation of integrated vector management strategies; help ensure that women in affected countries have access to appropriate health care and support and the best information available – recognizing that the best information is indeed changing quickly; and in collaboration with our CDC and NIH and other research colleagues, use some of the approaches USAID has in place to leverage the private sector and speed the development and introduction of innovations to address Zika and other infectious diseases.

Due to USAID's long-standing relationships with national governments, international organizations, non-governmental organizations and the private sector, we will look to find ways to build on each country's existing maternal and child health, reproductive health, and HIV/AIDS platforms to respond to this virus. We are prepared to begin our efforts in the Americas and expand into other regions as needed.

Following are the specific components of the FY 2016 supplemental request for USAID:

<u>Communication/Behavior Change Strategy:</u>

There are immediate needs and opportunities for clear and important messaging about the virus. The content of the messaging will be iterative and will reflect new information as it becomes available. Empowering communities to take actions to protect themselves is key to protecting communities from the Zika virus as well as other mosquito-borne diseases. As our recent experience in West Africa during the Ebola outbreak has shown, even in the absence of readily available medical countermeasures, providing communities with actionable information results in reduced infection rates and incidence. Key to successful community action is involving community voices so that together solutions are developed and executed.

For example, communications messaging can reinforce national vector control operations that target the mosquitoes that are spreading the virus. Successful control of the mosquitoes, and ultimately the spread of the virus, is very much dependent on communities adopting local environmental control measures to reduce the mosquito populations, such as reducing standing water in tires or other receptacles, and assessing the local environment to determine where the

mosquitoes are most likely to breed – and eliminating those breeding sites. It is important to note that the measures being proposed to respond to the Zika virus will also prove to be equally effective against diseases, such as dengue and chikungunya, that are spread by the same mosquito species.

In addition, we will couple community level messaging with comprehensive mass media and social media messaging campaigns that will include partnerships with communications firms and large corporations, particularly in Latin America. We will build on messaging best practices that were learned in West Africa and will seek to leverage funding as much as possible from other donors and the private sector. For example, in West Africa during the Ebola outbreak, USAID; partnered with BBC Media Action and the Paul Allen Foundation to implement a large-scale effort to educate the public on how to mitigate the risks of Ebola. This proved highly effective, and the technical inputs were provided by USAID while most of the operational costs were borne by our private sector partners.

Community Implementation of Integrated Vector Management:

USAID will support implementation of a package of integrated vector management activities in communities at risk of the Zika virus to mitigate mosquito exposure. These activities could include robust community mobilization campaigns tailored to each community to actively reduce/eliminate standing water sources where *Aedes Aegypti* mosquitos breed, focal larviciding based on vector mapping and resistance data to eliminate major breeding sites, and window and door screening to reduce mosquito entry into homes and other important community settings such as schools, hospitals and workplaces. This effort will complement the communication/behavior change campaign and be integrated into community mobilization activities to reinforce personal protection measures, such as appropriate clothing to reduce skin exposure, repellents, etc. All of this work would follow standard environmental safeguards. These integrated vector management efforts will also incorporate new vector control tools as they become available including insecticide-based products and interventions deemed effective against *Aedes Aegypti* mosquitos. These efforts will build upon the foundation of experience and learning under the successful President's Malaria Initiative vector control programs in Africa, while also tailoring the interventions to the specific breeding patterns and feeding behaviors of *Aedes* mosquitos, which of course are different than the malaria-transmitting *Anopheles* mosquito.

Maternal Health Care:

Health care workers are a direct link to the community and in many situations the "first responder" when a health event occurs. USAID has extensive partnerships and platforms to strengthen the capacity of health care workers to provide clear counseling and care to at risk or affected families. Building on USAID and the USG's existing PEPFAR, maternal and child health, and family planning platforms, we will expand access to care and support for impacted women and their families. As we have seen with dengue, good patient care is a critical component of an effective and comprehensive program. This includes support for training of health care workers, and updating the information and training as new data becomes available; providing support for pregnant women, including helping them access repellant to protect against

mosquitos; ensuring access to voluntary family planning information, services, and methods; and providing information about microcephaly and best practices for supporting children with microcephaly.

Innovations:

My colleagues from NIH and CDC have described the critically important research they are currently supporting to address the Zika virus and other vector borne diseases. They will be working diligently to develop the urgently needed tools and understand the relationship between the Zika virus and birth defects. As we have seen in other areas, use of market incentives can also speed the development of these new tools and help get them quickly into use.

For example, market incentives can be used throughout the development process, from catalyzing early-stage development of diagnostics, therapeutics and vaccines or other tools, to incentivizing more costly late-stage product development, manufacturing and scale. Product development partnerships such as FIND – the Foundation for Innovative New Diagnostics – have been successful in partnering with the biopharmaceutical companies to accelerate the development of global health innovations. For example, FIND has partnered with small biotechnology firms to push the development of critically needed diagnostics for neglected diseases, including the Xpert MTB/RTF drug-resistant tuberculosis diagnostic tool. Multi-donor partnerships such as Gavi have played a critical role incentivizing development and manufacturing of late-stage vaccines. Gavi recently announced a small advance purchase commitment of an Ebola vaccine to pull the late stage vaccine toward licensure. USAID has been a proud supporter of Gavi and collaborated closely with FIND. These kinds of approaches could be very valuable for pushing forward innovations for detecting, preventing and treating Zika virus.

USAID has also had tremendous success with its Grand Challenges for Development initiative, sourcing groundbreaking innovations from all over the world. USAID is prepared to build on the successes of the Grand Challenge undertaken during the Ebola epidemic where we rapidly sourced new innovations to address key gaps in our response. Areas of focus of a new Grand Challenge could include innovative solutions to address critical shortcomings in diagnostics, vector control, personal protection and community engagement.

The Ebola Grand Challenge demonstrated that it is possible to rapidly source new innovations during an outbreak. The Challenge generated over 1,500 ideas within weeks of launching and USAID – in close partnership with the White House Office of Science and Technology Policy, CDC and the Department of Defense – selected 14 promising innovations across five areas including:

- Healthcare Worker Safety: Re-engineered protective suits and improved methods of decontamination.
- Cutting-Edge Health Care Worker Tools: A wearable, Bluetooth-enabled patient sensor to track key patient vitals remotely.
- Rapidly Deployable Ebola Treatment Centers (ETCs): Modular ETCs that can be deployed and stood up in days.

- Behavior Change: Song contest in Guinea with top West African musicians.
- Health Information Technology: Open-source mobile platform for health data collection, decision support, patient tracking and an integrated health management system that supports contact tracing and clinical case management.

Several of these innovations are already in use now; others are in testing and are close to approval. For example, CommCare and mHero is used to support contact tracing, health care worker decision support tools, and two-way communication between health care workers and government officials for real-time information sharing. Another example is Drip Assist, a low-cost, battery-powered infusion monitor that delivers fluids with precision to patients, eliminating the risk of fluid overload and enhancing survival. This device received FDA approval last fall and is beginning to roll out. We also supported user testing in Sierra Leone where it was viewed as a real game-changer for healthcare workers who struggle to ensure that their patients get the fluids they need with current tools. The Ebola Grand Challenge also reminded us, however, that while we can source new innovations quickly, research and development can be a lengthy process – particularly in health where safety is paramount. We will look to ensure that any investments we make for the latest outbreak also help to ensure that we are equipped with the most cutting-edge tools to respond to and, ideally prevent, outbreaks of tomorrow.

Zika, the changing ecological landscape, and the Global Health Security Agenda

Zika, like MERS, SARS, avian influenza, and Ebola all point to a changing landscape where the interaction between humans, animals, and vectors is vastly different and constantly changing. Ecological and climate change in an increasingly interconnected world mean that mosquito borne diseases such as Zika can appear in areas they hadn't been before. These rapidly changing dynamics are fundamentally altering the emergence patterns of zoonotic and vector borne diseases, and increase the likelihood of new spillover and amplification opportunities for these pathogens into human populations.

In February 2014, the U.S. joined with other countries to launch the Global Health Security Agenda (GHSA). GHSA is an international effort to build capacity to prevent, detect and respond to infectious diseases, and to build political commitment to ensure appropriate action is taken when needed.

As we address the immediate needs of the Zika-affected populations and respond to the potential further spread of the virus, we must take this opportunity to further illuminate the need for improved national systems to prevent, detect, and respond to high consequence pathogens. This effort is at the heart of the GHSA.

If there is anything that Zika has already taught us, it is that there will be a next time – another pathogen that spills into humans with the potential to amplify and spread beyond borders. Our short-term investments in response to and recovery from the Zika virus must be balanced with an outlook for preparing and equipping those countries already committed to the International Health Regulations and Global Health Security Agenda with national preparedness platforms, improved surveillance systems, sustainable diagnostic capabilities, and flexible multi-sectoral response plans.

USAID is one of a number of U.S. government agencies deeply committed to helping achieve the objectives of GHSA. We are working in very close partnership with the White House and our colleagues at the Department of Health and Human Services, including CDC and NIH; the State Department; the Department of Defense, U.S. Department of Agriculture among others. Through GHSA, USAID builds on the significant investments we have made over the past 10 years.

Our work on building zoonotic disease capacity – or "One Health" recognizes the close connection between animal and human health. This work focuses on building those capacities and expanding the evidence base that contribute to mitigating the impact of novel "high consequence pathogens" arising from animals – the primary reservoir for most emerging disease threats.

Overall, USAID's strategic approach to "One Health" has been guided by the following principles:

- All populations are vulnerable to new diseases emerging in other countries; it is in our collective interest to strengthen the capacity of all high-risk countries to prevent the emergence and spread of these new disease threats.
- Deadly zoonotic disease threats, and outbreaks of diseases will increase steadily in the coming decades driven by population growth and expanded interactions between people, animals and the environment.
- Measures are currently available that if properly deployed could greatly reduce the risk of new disease emergence and their impact.
- It is possible, in the event of new disease emergence, to minimize its potential economic and public health impact through enhanced surveillance and early deployment of control measures.
- Enhanced coordination across animal, human, and environmental sectors will contribute to reduced risk of new disease emergence and lead to early and effective control minimizing their impact should they emerge.

At the country level, we work with governments and other key in-country, regional and international partners to characterize the key drivers of disease emergence—from deforestation and land use change to wildlife trade and livestock product demands. This information, along with other investments to strengthen country-level capacities for routine infectious disease detection and outbreak response, have been used to improve surveillance and response as well as to develop risk-mitigation strategies. This work has significantly refined our understanding of the "drivers" that underlie disease emergence and established important new partnerships and platforms for even more timely and effective prevention, detection, and control of future threats. The program draws from across the private sector, universities and non-governmental organizations, as well as UN technical agencies.

GHSA as a global partnership is focused on accelerating progress toward making the world safe from the threats posed by emerging infectious diseases. GHSA recognizes emerging infectious diseases are among the foremost dangers to human health and global security. In January, this

concept was underscored by the National Academy of Medicine when they released, "*The Neglected Dimension of Global Security: A Framework to Counter Infectious Disease Crises*." The authors make the point that we will continue to see outbreaks of infectious diseases, and investing in the appropriate preparedness and response capacity should be a core component of global security, and that the annualized cost of pandemic risk is $60 billion. The ongoing outbreak of the Zika virus in the Americas once again highlights our need to collectively invest in maternal child health, disease specific interventions and the Global Health Security Agenda.

Conclusion

USAID is committed to addressing the Zika virus outbreak of today and strengthening capacities to ensure that future threats will be rapidly and effectively controlled at their source and before they pose a threat to the global community. Thank you for the opportunity to speak with you today and to share the contributions we are prepared to make. I am happy to answer any questions.