



**TESTIMONY**

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**BEFORE THE**

**COMMITTEE ON ENERGY AND COMMERCE**

**SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS**

**UNITED STATES HOUSE OF REPRESENTATIVES**

**“THE STATE OF U.S. PUBLIC HEALTH BIOPREPAREDNESS:  
RESPONDING TO BIOLOGICAL ATTACKS, PANDEMICS, AND EMERGING  
INFECTIOUS DISEASE OUTBREAKS”**

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**RELEASE ONLY UPON DELIVERY**

## **Introduction**

Chairman Harper, Ranking Member DeGette, and members of the committee, thank you for the opportunity to appear today to discuss the Food and Drug Administration's (FDA or the Agency) efforts to prepare our Nation to respond to biological threats, such as biological weapons and naturally-emerging infectious diseases, like pandemic influenza, Zika virus, and Ebola virus.

Biological threats—whether deliberate, naturally occurring, or accidental—can and often do emerge with little to no warning. This was the case with the anthrax attacks of 2001, the 2009 H1N1 influenza pandemic, the 2014 Ebola outbreak in West Africa, the emergence of Zika virus in 2016, and the recent Ebola outbreak in the Democratic Republic of Congo (DRC), to name just a few.

We are continually reminded that biological threats know no borders, and that biological threats can rapidly become global challenges. As such, we must remain vigilant and continue to work to optimize our preparedness and response capabilities.

## **FDA's Public Health Preparedness and Response Mission**

FDA plays a critical role in facilitating preparedness for, and response to, biological threats (as well as chemical, radiological, and nuclear (CBRN) threats). FDA's role focuses largely on facilitating the development and availability of medical countermeasures—such as vaccines, therapeutics, and diagnostic tests—to protect against, and respond to, these threats.

FDA works closely with its HHS and other U.S. government partners through the Public Health Emergency Medical Countermeasures Enterprise (PHEMCE), as well as with regulated industry and non-governmental organizations (NGOs), to sustain and optimize the medical countermeasure framework necessary to effectively respond to public health emergencies. FDA also works closely with the Department of Defense (DoD) to facilitate the development and availability of medical countermeasures to support the unique needs of our nation's military personnel.

FDA's operations within its medical countermeasures mission cover a broad range of activities vital to facilitating the development of, and access to, safe and effective medical countermeasures, including:

- Reviewing marketing applications for medical countermeasures and approving those that meet standards for safety and efficacy;
- Providing regulatory advice, guidance and technical assistance to sponsors developing medical countermeasures, as well as to U.S. government partners, international regulators, and international organizations such as the World Health Organization;
- Supporting efforts to establish and sustain an adequate supply of medical countermeasures, including averting supply disruptions when feasible and, in certain situations, allowing products to be used beyond their labeled expiration dates when supported by appropriate scientific evaluation;
- Enabling access to medical countermeasures that are not yet approved—when necessary—through an appropriate mechanism, including through FDA's Emergency Use Authorization (EUA) authority;
- Proactively identifying and resolving regulatory challenges associated with medical countermeasure development and ensuring that FDA regulations and policies adequately support timely medical countermeasure development and enable preparedness and response activities and capabilities;
- Fostering the professional development of FDA scientists to ensure that FDA personnel maintain the skills and abilities to support the medical countermeasure mission; and
- Supporting regulatory science to create the tools, standards, and approaches necessary to develop and assess the safety, efficacy, quality, and performance of medical countermeasures.

### **Fostering Medical Countermeasure Development and Availability**

FDA's Medical Countermeasures Initiative (MCMi)—established in 2010—brought enhanced resources to FDA that enabled FDA to hire additional expert staff, and to become more deeply

and thoroughly engaged in medical countermeasure activities. This program continues to be key to providing certainty regarding regulatory pathways for medical countermeasures, advancing medical countermeasure regulatory science to support regulatory decision-making, and advancing important policies and mechanisms to facilitate the timely development and availability of medical countermeasures.

At FDA, we fully appreciate that the development of medical countermeasures can present complex and unique challenges. FDA's increased engagement in medical countermeasure activities has helped to resolve many challenges associated with medical countermeasures development so that programs continue to move forward. For example, since 2012, FDA has approved, licensed, or cleared more than 120 medical countermeasures (including supplemental changes to already approved applications and modifications to diagnostic devices) for a diverse array of threats including anthrax, botulinum toxin, plague, smallpox and pandemic influenza. Thirteen of these medical countermeasures have been approved under the Animal Rule, which enables animal efficacy studies to substitute for efficacy trials in humans if the results can reasonably be extrapolated to the expected human use.<sup>1</sup> These approvals underscore the critical role the Animal Rule and animal studies can play in advancing medical countermeasures for some of the most challenging threats. And of note, through the use of regulatory science, FDA was able to approve inhalational anthrax therapeutics and a botulism antitoxin for use in children as well as adults, despite the fact that ethical concerns precluded studying pediatric patients in clinical trials.

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<sup>1</sup> To date, a total of 13 medical countermeasures have been approved under the Animal Rule, including inhalational anthrax therapeutics, a botulism antitoxin, antibiotics for the treatment and prophylaxis of plague, and treatments for acute radiation syndrome, prophylaxis against the lethal effects of soman nerve agent poisoning, and treatment of known or suspected cyanide poisoning.

In the area of pandemic influenza preparedness, FDA has approved several influenza diagnostic tests, which can help facilitate an effective response to an influenza pandemic by rapidly identifying infected persons and facilitating appropriate care. In addition, FDA has approved several seasonal influenza vaccines, helping increase and sustain pandemic influenza vaccine production capacity. These approvals include the first seasonal influenza vaccine produced using modern cell culture techniques licensed in the United States, and the first seasonal influenza vaccine made through recombinant deoxyribonucleic acid (DNA) technology. Both of these vaccines offer an alternative to the egg-based process and a potential for a faster manufacturing startup in the event of a pandemic. FDA also approved the first adjuvanted influenza vaccine for use in people 18 years of age and older who are at increased risk of exposure to the avian influenza H5N1 virus subtype contained in the vaccine. This vaccine is not for commercial distribution but will be part of the national stockpile in the event it is needed. Furthermore, FDA has continued to collaborate closely with the Biomedical Advanced Research and Development Authority (BARDA), the National Institute of Allergy and Infectious Diseases (NIAID), and the Centers for Disease Control and Prevention (CDC) on developing avian influenza H7N9 virus vaccine candidates.

Additionally, FDA approved the first intravenous antiviral drug to treat acute, uncomplicated influenza infection in adults and expanded its indication to include treatment of children ages two years and older. FDA also expanded the indications for use of the influenza antiviral, oseltamivir, to treat children as young as two weeks of age.

FDA also continues to facilitate the development of products to address antimicrobial resistance, including antibacterial drugs to treat patients with antimicrobial resistant infections, vaccines that can help prevent the emergence and spread of antimicrobial resistance, and diagnostic tests that can help rapidly identify the appropriate treatment for infected individuals. For example, FDA has been implementing Title VIII (Generating Antibiotic Incentives Now (GAIN)) of the Food and Drug Administration Safety and Innovation Act (FDASIA) since it became law in July 2012. GAIN created incentives to help develop new antibacterial and antifungal drugs intended to treat serious or life-threatening infections. Those meeting requisite criteria are determined to be qualified infectious disease products (QIDPs).<sup>2</sup> FDA has granted 147 QIDP designations through the end of FY 2017—approximately 74 of which were for novel drugs. Since the enactment of GAIN, 12 QIDPs have been approved.

With respect to supporting the development of diagnostic tests for antimicrobial resistant threats, FDA and CDC have collaborated to develop the AR Isolate Bank, a centralized repository of microbial pathogens with well-characterized resistance profiles. The AR Isolate Bank, which currently contains three bacterial isolate panels of pathogens of national medical concern (representing more than 160 total pathogens), provides a valuable resource to biotech and diagnostic groups in researching, designing, validating and evaluating next generation clinical tests. These tests in turn may support earlier diagnosis and development of more effective treatment options that can slow antibiotic resistance. As of January 2018, the AR Isolate Bank shipped more than 2,000 isolate panels.

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<sup>2</sup> A QIDP is defined as an antibacterial or antifungal drug for human use intended to treat serious or life-threatening infections, including those caused by an antibacterial or antifungal resistant pathogen, including novel or emerging infectious pathogens.

There are still regulatory science gaps that can challenge development programs, however, such as a lack of animal models to support medical countermeasure development or insufficient biomarkers to enable the extrapolation of data generated in animal models to humans. Without such tools, it is difficult to generate the data necessary to support regulatory decision making. Given the urgency inherent in our medical countermeasure work, addressing these regulatory science gaps remains a high priority for the Agency.

To that end, FDA has established a broad and robust portfolio of cutting-edge research under the MCMi Regulatory Science Program to help develop these tools and promote innovation in the development of medical countermeasures. A few examples of projects include: supporting the development of “organ-on-a chip” models to assess radiation damage in lung, gut, and bone marrow, and then using these models to test candidate medical countermeasures; collaborating to establish a publicly-available genomic sequence reference database for use by developers seeking to validate candidate multiplex *in vitro* diagnostic tests that could be used to diagnose multiple pathogens simultaneously (FDA-ARGOS); developing reference materials for developers to use to validate nucleic acid-based and serological diagnostic tests for Zika virus; supporting a project to identify and correlate biomarkers of host response to Ebola virus infection in animal models and humans to support medical countermeasure development; developing methods for obtaining safety and limited efficacy data from patients who receive medical countermeasures during public health emergencies; and establishing the Animal Model Qualification Program designed to support medical countermeasure development by promoting

the development of animal models for use across multiple product applications, thereby minimizing duplication of effort and resources.

FDA is acutely aware that biothreats can also emerge from accidental release or exposure to threat agents during the course of conducting research. As such, the Agency works to ensure that its laboratories and workplaces are operated in a safe and secure manner to protect employees, the surrounding communities, and the environment. This includes ensuring that FDA is in compliance with the Select Agent Regulations as well as with Federal, state, and local occupational safety and health requirements (as appropriate), and environmental regulations.

FDA also works to establish and sustain an adequate supply of medical countermeasures. For example, FDA supports the Shelf Life Extension Program (SLEP), a Federal fee-for-service program, for extending the useful shelf life of military-significant and contingency-use medical products, including medical countermeasures that are owned by components of DoD or other Federal program participants, such as the Strategic National Stockpile (SNS).<sup>3</sup> FDA laboratory personnel test and evaluate drugs submitted for shelf-life extension to ensure stability and quality before a shelf-life extension is approved.

In addition, FDA works to ensure that the U.S. Government is as prepared as possible to rapidly deploy medical countermeasures when necessary. For example, FDA has worked with government partners to prepare for potential EUA authorization of stockpiled medical

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<sup>3</sup> SLEP is designed to defer drug replacement costs for date-sensitive stockpiles of drugs by extending their useful shelf life beyond the manufacturer's original expiration date.



countermeasures against a diverse array of threats including smallpox, anthrax, and pandemic influenza.<sup>4</sup>

There are tremendous opportunities to continue to further the development of groundbreaking, innovative medical countermeasures, and the Agency intends to fully seize, and build upon, these opportunities.

### **Responding to Threats**

When threats emerge, FDA works proactively with U.S. government partners, medical product developers, and, as necessary, international partners (including the World Health Organization (WHO) and international regulatory counterparts) to respond. Key FDA response activities include accelerating the development of investigational medical countermeasures, when needed, by working with U.S. government agencies that support medical countermeasure development and medical product sponsors to clarify regulatory and data requirements. For example, FDA continues to work closely with U.S. government agencies, the international community, and product developers—providing regulatory advice, guidance, and technical assistance—to advance the development and availability of medical products, including vaccines and therapies, to address Ebola virus and Zika virus. These activities are essential not only for advancing the development of investigational medical countermeasures to respond to ongoing outbreak and epidemics, but also to improve response to future outbreaks and epidemics. For example, FDA

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<sup>4</sup> To facilitate the issuance of EUAs, FDA has developed a pre-EUA submission process. FDA works with product sponsors or government agencies, such as CDC and DoD, to develop pre-EUA packages that will form the basis of an EUA request and decision, when circumstances justify. Pre-EUA packages contain data and information about the safety and efficacy of the product, its intended use under an EUA, and information about the potential emergency situation that might unfold.

worked closely with NIH in response to the 2014 Ebola epidemic in West Africa to design an innovative and robust common clinical trial protocol to evaluate the most promising investigational products for Ebola. The experience and information gained from those efforts have been instrumental in supporting a rapid response to the recent Ebola outbreak in the DRC.

FDA also works to protect the safety of the nation's blood supply and human cells, tissues, and cellular/tissue-based products for transplantation when threats emerge. For example, FDA worked closely with developers to make rapidly available two investigational tests for blood screening for Zika virus. One of those tests has since been approved.

Another key FDA response activity to emerging threats is to enable access to investigational medical countermeasures, when necessary, through an appropriate mechanism such as under an investigational new drug (IND) application, an Emergency Use Authorization (EUA), or under expanded access mechanisms when the clinical circumstances warrant. Enabling access to available medical countermeasures in response to emerging threats is a high priority for FDA and FDA uses its authorities to the fullest to help protect public health. For example, since 2013, FDA has issued nearly 40 EUAs to enable the emergency use of in-vitro diagnostic devices for H7N9 Influenza virus, Enterovirus D68 (EV-D68), Middle East Respiratory Syndrome Coronavirus (MERS-CoV), Ebola virus, and Zika virus.

FDA also works to protect consumers against fraudulent products claiming to prevent, treat or cure conditions associated with emerging threats.

Throughout these response activities, FDA works to establish and maintain good lines of communication with WHO and regulatory authorities in affected countries, as necessary, to enable technical and information exchange, and to make sure that the needs of the affected countries are understood and addressed.

## **Conclusion**

At FDA, we have made it a priority to proactively work with our private sector and government partners to help facilitate the translation of discoveries in science and technology into safe and effective medical countermeasures. FDA takes seriously its responsibility to help drive and foster innovation as part of advancing public health and strengthening our national security. Active FDA involvement is essential to encouraging industry engagement in medical countermeasure development. Working closely with its partners and exercising the authorities Congress provides to the fullest extent, FDA remains deeply committed to protecting and promoting public health, both domestically and abroad, in response to public health threats.

FDA appreciates Congress's support in continually optimizing its authorities, and providing resources, to enable FDA to achieve its public health emergency preparedness and response mission. FDA stands ready to work with Congress and stakeholders to enable us to better achieve this critical work in our mission to protect the American people.

Thank you for inviting me to testify today. I look forward to answering any questions you may have.