The Public Health Emergency Medical Countermeasures Enterprise

Innovative Strategies to Enhance Products from Discovery Through Approval

In response to a request from the Department of Health and Human Services (HHS) Assistant Secretary for Preparedness and Response, the Institute of Medicine convened a workshop on February 22–24, 2010, titled The Public Health Emergency Medical Countermeasures Enterprise: Innovative Strategies to Enhance Products from Discovery Through Approval. The workshop examined federal policies and activities that affect medical countermeasure discovery, development, and approval, and explored potential opportunities to enhance the public health emergency medical countermeasures enterprise.

The Time is Now, but the Challenges are Great

Safe and effective medical countermeasures, including vaccines, drugs, and diagnostics, are critical for responding to large-scale public health emergencies. Such situations, be they natural (such as pandemic influenza) or man-made (such as terrorism), have the potential to rapidly overwhelm public health and medical systems. America’s national security depends on having appropriately licensed chemical, biological, radiological, and nuclear medical countermeasures in its arsenal of defenses.

Despite its successes, certain structural, strategic, and technical elements of the countermeasures enterprise continue to impede research, development, and production of medical countermeasures. To begin to address the efficiency and effectiveness issues of the countermeasures enterprise, the HHS Secretary Kathleen Sebelius charged the “Office of the Assistant Secretary for Preparedness and Response (ASPR) to lead a review of its entire public health countermeasures enterprise.” This workshop was convened to assist in the

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–Thomas Frieden, Centers for Disease Control and Prevention
HHS review of the countermeasures enterprise. In her opening comments and charge to the workshop participants, the HHS Assistant Secretary for Preparedness and Response, Dr. Nicole Lurie, said that the United States does not necessarily have the countermeasures needed to respond to a public health emergency, regardless of whether it is natural or initiated by humans. Although signs of progress have been apparent in recent years, much more work is needed to protect the nation against the range of potential threats. Using the recent H1N1 influenza pandemic as an example, she also noted that even when countermeasures are available, low levels of public acceptance of the countermeasure can inhibit an effective response, and significant public education efforts may be required. A primary goal of the end-to-end review of the public health countermeasures enterprise is to understand the challenges related to the current approach to develop countermeasures and the opportunities to improve them. HHS is seeking to understand how the incentive structures, policies, and procedures are, or are not, aligned with the needs of the pharmaceutical and biotechnology industries, the United States government, and the American people.

Focus on Health Impact, Principles for Health Protection

Thomas Frieden, director, Centers for Disease Control and Prevention, highlighted the need for the end objective of the countermeasures enterprise to focus on health impact, health protection. A key challenge for the countermeasures enterprise is how to achieve the greatest health impact in the face of diminishing resources. He said an effective response starts with several basic principles: 1) Define what is needed, 2) Decide what to make, and make it 3) Ensure that the countermeasures that are developed reach the people who need them most, using everyday systems that can be scaled up, and 4) Monitor the countermeasures and communicate with the public.

Going forward, Frieden said, better countermeasure delivery will require better intelligence about the presence, modification, and weaponization of different agents; storage and deployment logistics, evidence-based clinical recommendations and algorithms for use; and laboratory capacity that can adapt to the unexpected.

Moving Forward at the FDA: Four Key Principles

Jesse Goodman, chief scientist and deputy commissioner for science and public health (acting) of the Food and Drug Administration (FDA), emphasized that the time is right for action on medical countermeasures and pandemic preparedness. The public health and national security needs are clear; there are multiple insights from the accomplishments and limitations of Project BioShield and from the experiences with 2009 H1N1 influenza; the public, policy makers, and the administration are interested; and there is bipartisan engagement and collaboration across agencies. Going forward, Goodman said, FDA is focusing on the following four key principles:

- End-to-end partnering, including highly interactive and collaborative engagement and outcomes-oriented management.
- Increased attention to regulatory science, to expand agency capacity and knowledge and thereby enhance the quality and integrity of FDA decision making.
- More agile platform and multiuse technologies (for example, vaccine, diagnostic, or monoclonal platforms) that can be rapidly adaptable to address new pathogens.
- Policies that meet public health needs.
Opportunities for Accelerating Approval of Medical Countermeasures: Evolving the Regulatory Framework

Numerous individual suggestions were made about addressing the regulatory aspect of the medical countermeasures enterprise. They are compiled here as part of the factual summary of the workshop, and should not be construed as reflecting consensus or endorsement by the workshop, the Forums, or The National Academies.

They are as follows:

• **Fund, support, and enable regulatory science.** Develop, assess, and provide tools, methods, models, standards, guidance, and pathways to evaluate product safety, efficacy, and quality.

• **Create a designation indicating that a program is relevant to national security** and establish priority review for medical countermeasure applications.

• **Balance data needs according to risk/benefit.** Because medical countermeasures will be used in situations of grave risk, the amount of data needed for approval may be less than that for a more mainstream product.

• **Facilitate communication with product sponsors** and send FDA agency staff into the field to assist companies as needed.

• **Abandon the Draft Guidance on the Animal Rule,** which is significantly more restrictive than the Animal Rule itself.

• **Provide regulatory and licensure guidance to funding agencies on development programs** and reflect FDA data needs in NIH trial design and conduct.

The Way Forward—Themes from the Workshop

Additional suggestions regarding a wide variety of areas relevant to medical countermeasures development were presented by individuals during the workshop and are compiled here. Investigating details about the feasibility and implementation of these ideas were beyond the scope of the workshop. The additional suggestions include the following:

• **Institute a single, unified management structure for the federal countermeasures enterprise.**

• **Facilitate improved end-to-end partnering between federal agencies (NIH, ASRP/BARD, DoD, FDA), industry, and academia throughout research and development of medical countermeasures.**

• **Develop target product profiles.** Define the product, including both the indication (for example, disease/condition to be treated) and what an appropriate product would be to use.
in a public health emergency.

- **Utilize grants and contracts to incentivize research and development in multi-use agents.**
- **Use the Federal Acquisition Regulation to create commercial markets for biodefense products.**
- **Simplify the intellectual property system and improve alignment between FDA approval and when a patent is granted.** Consider a full 20-year patent term for government-chosen medical countermeasures and a data protection period of 20 years, both running from the day of FDA approval.
- **Establish incentives and public private partnerships** to encourage greater investment by the private sector.
- **Ensure integrity of Project Bioshield funds** and increase funding for countermeasures research and development.
- **Commit to multiyear federal funding of CBRN/pandemic countermeasures** to ensure companies are able to maintain a continuous development program.
- **Consider a tax benefit for equipment purchased** for use in the development or manufacturing of medical countermeasures.
- **Make the federal government the defendant in all the tort claims** resulting from countermeasures.
- **Establish more agile platforms and multiuse technologies** (for example vaccine, diagnostic, or monoclonal platforms) that can be rapidly adaptable to address new pathogens.
- **Engage end users,** specifically public health professionals and healthcare providers, in requirement setting.
- **Improve public engagement.** Robust and continued public engagement helps to ensure the legitimacy of the countermeasures enterprise, communicates the risk, communicates those plans currently in place, and helps produce the best possible result.
- **Create technical centers of excellence** to help ensure the necessary expertise, including dedicated capabilities/core resources and manufacturing facilities.
- **Invest in career development strategies** to ensure the necessary scientific and regulatory expertise.