BIODEFENSE

Federal Efforts to Develop Biological Threat Awareness

Why GAO Did This Study

Biological threats come from a variety of sources and can pose a catastrophic danger to public health, animal and plant health, and national security. Threat awareness, which consists of activities such as collecting and analyzing intelligence, developing risk assessments, and anticipating future threats, is vital to help federal agencies identify necessary biodefense capabilities and ensure investments are prioritized to make effective use of federal funds.

GAO was asked to review how key federal agencies develop and share threat awareness information, and how that information informs further investments in biodefense. This report describes: (1) the types of actions that key federal agencies have taken to develop biological threat awareness, and how that information is used to support investment decisions; (2) the extent to which these agencies have developed shared threat awareness; and (3) how DHS's NBACC determines what additional threat characterization knowledge to pursue.

GAO analyzed federal policies, directives, and strategies related to biodefense, as well as agency documents such as threat assessments and modeling studies. We identified five key biodefense agencies based on review of the roles designated in these documents. GAO interviewed officials from these agencies about threat awareness activities, and reviewed prior GAO work and related biodefense studies. Each of the key agencies reviewed a draft of this report and provided technical comments that GAO incorporated as appropriate.

View GAO-18-155. For more information, contact Chris Currie at 404-679-1875 or curriec@gao.gov.

What GAO Found

Key biodefense agencies—the Departments of Homeland Security (DHS), Defense (DOD), Agriculture (USDA), and Health and Human Services (HHS), and the Environmental Protection Agency—conduct a wide range of activities to develop biological threat awareness for intentional and naturally occurring threats, and reported using that information to support investment decisions.

- **Intelligence gathering:** Agencies use a combination of intelligence gathering on adversaries' capabilities to cause harm with a biological weapon and global disease surveillance to monitor threats from naturally occurring health threats that might impact humans, animals, or plants.
- **Scientific research:** Agencies use traditional laboratory research to help understand the characteristics of various threat agents, including their virulence, stability, and ability to be dispersed through various methods. Scientific research is also performed on emerging pathogens to understand their means of transmission, host susceptibility, and effects of infection.
- **Analysis activities:** Agencies use modeling studies and other analytical work to help determine the scope and impact of possible biological threats.

These three activities help agencies identify and prioritize the most dangerous biological threats, which can then be used to guide biodefense investments. For example, USDA told GAO it uses threat information to determine which foreign animal diseases represent its highest priorities based on the potential of those agents to cause catastrophic harm, and those priorities are used to inform investments. Similarly, HHS said it conducts threat awareness activities to help inform the development and acquisition of human medical countermeasures.

Federal agencies with key roles in biodefense share biological threat information through many different mechanisms designed to facilitate collaboration among government partners, including working groups and interagency agreements. For example, agency officials reported using collaborative mechanisms to coordinate activities and avoid duplication and overlap. However, as GAO and others have noted, opportunities exist to better leverage shared resources and inform budgetary tradeoffs. Recent legislation requires key biodefense agencies to create a national biodefense strategy that has the potential to help address these issues, by, among other things, supporting shared threat awareness. Until the strategy is developed, the extent to which it will meet this need is unknown.

The threat characterization research agenda at DHS's National Biodefense Analysis and Countermeasures Center (NBACC) is based primarily on the results and knowledge gaps identified through the Bioterrorism Risk Assessment (BTRA). According to DHS officials, the knowledge gaps deemed most critical include data about biological agents that have a high impact on BTRA consequence estimates and also a high degree of uncertainty. Each year NBACC produces an annual plan that outlines new research projects intended to address these knowledge gaps, and incorporates additional planning criteria, such as interagency stakeholder input, resource availability, and maintenance of required technical capabilities. According to DHS officials, the results of NBACC research were used to directly enhance the BTRA, including updating data associated with eight biological agents since 2010.

_____ **United States Government Accountability Office**