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Infectious Disease and National Security

Strategic Information Needs

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Prepared for the Office of the Secretary of Defense

Approved for public release; distribution unlimited



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Summary

The global community has suffered recently from newly emerged infectious diseases, including HIV/AIDS and severe acute respiratory syndrome (SARS), and from reemerging diseases once thought to be in decline. Additionally, it is increasingly recognized that infectious disease can pose a significant threat to U.S. and world security. To best understand and mitigate this threat, U.S. policymakers require adequate and timely information about the occurrence of infectious disease worldwide.

The Advanced Systems and Concepts Office of the Defense Threat Reduction Agency asked the RAND Corporation to examine infectious diseases within the context of national security and assess the need for and the adequacy of such information among U.S. policymakers. The primary objectives of this study were to assess the availability of information concerning global infectious disease threats and to determine the suitability and use of such information to support U.S. policymaking in preventing or otherwise responding to such threats. During the study, we conducted literature and document reviews, surveyed the current state of available information systems related to infectious disease, and interviewed 53 senior policymakers and staff from agencies across the federal government and from selected outside organizations. Our findings are summarized below.

Globalization Increases Both Risks and Opportunities

Approximately a quarter of all deaths in the world today are due to infectious diseases. In decades and centuries past, an outbreak of infectious disease was often limited to the locale in which it occurred. However, the pace of global travel, migration, and commerce has increased dramatically in recent decades, and that increase poses an increased global risk of disease. In the age of air travel, infectious disease agents can traverse the globe in less time than it takes for an infectious agent to incubate and cause symptoms in an infected person. As was seen with the rapid spread of SARS around the world, and into Canada in 2003, the risk of a new or reemerging infectious disease being introduced in the United States is perhaps higher now than ever. Certainly, the prospect of a pandemic caused by an avian influenza virus (H5N1 or another strain yet to emerge) has occupied both the U.S. media and policymakers in recent months; in fact, preparation for a pandemic influenza outbreak has recently become one of the President's top priorities. It is likely that such a pandemic would be enabled by globalization—frequent and unencumbered travel and trade.

The preparations for pandemic influenza being undertaken at the highest levels of the U.S. government highlight the link between infectious disease and national security. Obviously, the United States is concerned about infectious diseases crossing its borders, but the global toll of infectious disease also raises security concerns. Infectious disease can have significant effects that can lead to the destabilization of nations and regions through direct mortality and morbidity as well as staggering economic and social loss. Indeed, the U.S. State Department considers disease a potential war trigger.

While globalization has increased the risk and spread of infectious disease, there is no doubt that it has also benefited the world economically and culturally. Similarly, the same technologies that have enabled globalization also present opportunities to combat the threats it may pose, particularly in controlling infectious disease. These technologies notably include methods to collect and communicate information about infectious disease outbreaks more effectively and quickly than ever before. Faster worldwide notification of outbreaks can result in better and faster responses to contain them. Key questions, then, would address what types of infectious disease information are needed, and what information is currently available to U.S. policymakers.

The United States Has Responded to the Threat

The 1970s and 1980s saw complacency in the United States toward infectious diseases, in part due to a general perception that they no longer posed a significant risk. Infectious disease mortality declined in the United States during most of the 20th century. This trend was reversed in the 1980s and 1990s, yet it remained unclear whether infectious diseases were seriously considered in the national security strategy of the United States or other developed countries. The terrorist and bioterrorist attacks of September and October 2001 changed that posture. Since 2001, the United States has focused new attention on preparedness for detecting and responding to acts of bioterrorism. Legislation and executive policy documents have triggered a number of security-oriented initiatives directed at bioterrorism threats. It is clear that these initiatives, and their underlying infrastructures, are also useful for detecting and responding to naturally occurring outbreaks of infectious diseases. To policymakers involved in public health and bioterrorism preparedness, the relationship between infectious disease and national security is now clear, and it creates a need for timely and accurate information.

There Is Consensus About Information Needs

In recognizing that infectious disease and national security are linked, what kind of information do policymakers need to counter the disease threat? Does the United States employ a systematic approach to the collection of information for the early warning of infectious disease outbreaks originating outside its borders? Is adequate and timely information available?

We interviewed policymakers about their views on these questions and solicited their recommendations on how the assets of the U.S. government—across a broad range of sectors—

could best be harnessed to create a national information system, if warranted. While each sector has its own focus and responsibilities, the information needs of policymakers across sectors are characterized more by their similarities than by their differences. The policymakers and other stakeholders we interviewed expressed a strong desire for a centralized system that provides needed information to all stakeholders, and they described an ideal system as being (1) robust, drawing information from a wide range of sources and collecting information that is accurate and complete; (2) efficient, constituting a single, integrated source of timely information available to all stakeholders; (3) tailored to meet individual stakeholder needs and preferences; and (4) accessible, notwithstanding the need for protection of sensitive information.

Many Information Systems Currently Exist

To determine whether current systems might meet the expressed needs of policymakers, we compiled a database of Internet-based sources of information relevant to the public health aspects of infectious diseases, most notably disease surveillance. This database includes 234 sources from a wide range of organizational sponsors, including U.S. national and state governments, foreign national governments, and multilateral organizations. While they vary in their characteristics, these sources collectively provide abundant information. However, they do not meet all the needs of policymakers as outlined above. Most notably, there exists no single, integrated source of timely and accurate information.

The United States has recently funded an initiative that is intended to meet this need. The National Biosurveillance Integration System (NBIS) is based in the Department of Homeland Security (DHS) and is in the early stages of implementation; most policymakers we interviewed were unaware of its existence. While many of the 234 sources we assessed were focused narrowly in the way they collected information (e.g., reporting-based or Webcrawling) or in the type of information (e.g., animal or human data), NBIS is intended to be relatively expansive. NBIS is planned to combine data from multiple agencies—those with health, environmental, agricultural, and intelligence data—to provide all stakeholders with broad situational awareness that is expected to allow earlier detection of events and facilitate a coordinated response. Once fully operational, NBIS will insert these data into a common platform and combine them with environmental and intelligence data. DHS analysts are intended to work together with analysts from other federal agencies to process this information and present their analysis to the DHS Homeland Security Operations Center and an Interagency Incident Management Group.

Emerging Information Systems Require Evaluation

More and better information must be collected, integrated, and shared across government sectors that have, at best, a relatively short history of working together on shared priorities. It was suggested by some policymakers during this study that the United States needs a new centralized system for collecting, analyzing, and disseminating information about infectious

diseases. Our main recommendation is for an integrated system that meets all the criteria and requirements described above. We recommend early formative evaluation of NBIS or any similar systems to ensure that they are designed to fulfill all critical requirements and are implemented as designed. During early implementation, it will be important to ascertain whether the systems are adequate or whether new or different strategies are needed to inform the broad range of policymakers responsible for addressing infectious disease security threats to the United States.