National Biosurveillance Integration Center Strategic Plan

November 2012

Homeland Security

Table of Contents

EXECUTIVE SUMMARY

The 2010 Department of Homeland Security (DHS) Quadrennial Homeland Security Review states "ultimately Homeland Security is about effectively managing risks to the Nation's security." With risk defined as the likelihood and consequences of potential unwanted events, managing risks from naturally-occurring, accidental, or deliberate biological events such as emerging infectious disease or bioterrorism is difficult to accomplish through activities that attempt to reduce these events' likelihood of occurrence. Although much is being done to prevent these types of events, such events could and do still occur. Instead, activities that mitigate these risks largely focus on reducing, managing, or limiting the consequences of biological events[1] once they begin to occur. Surveillance plays an import role in early detection of such events, allowing an early response, limiting the spread and effects of such events. Doing this effectively requires the earliest possible warning that an event is occurring, as well as continuing shared situational awareness throughout the event, to enable effective decision making regarding what actions should be taken.

National Biosurveillance Integration Center

Mission: *Enable early warning and shared situational awareness of acute biological events and support better decisions through rapid identification, characterization, localization, and tracking.*

Strategic Vision: *Advance the safety, security, and resilience of the Nation by leading an integrated biosurveillance effort that facilitates early warning and situational awareness of biological events.*

The mission of the National Biosurveillance Integration Center (NBIC) is fundamentally about the integration of biosurveillance information to enable early warning and shared situational awareness,[2] and disseminate it to the appropriate people in a timely fashion. The *National Biosurveillance Integration Center Strategic Plan* first provides an overview of national biosurveillance in general, as well as current NBIC activities and operations, then outlines the goals and objectives required to achieve the NBIC's mission over the next five years. These strategic goals, objectives, and activities represent a balance of efforts that enable early warning and shared situational awareness through information ingestion and analysis; synthesis of existing government, private non-governmental, open-source, and classified information; and innovating advanced analytics and models, all in collaboration with federal partners and state, local, territorial, tribal, private, and international stakeholders. NBIC's goals and objectives outlined in this plan include these stakeholders and will be measured for success against specific milestones developed in collaboration with them.

The development of this Strategic Plan is the result of a deliberative process examining current

[1] The term "biological event of national concern is defined in Public Law 110-53: to mean—''(A) an act of terrorism involving a biological agent or toxin; or ''(B) a naturally occurring outbreak of an infectious disease that may result in a national epidemic." For the purposes of NBIC, biological spans a variety of domains to include the health of humans, animals, and plants, as well as the safety and security of food and the environment.

[2] In the context of this document, shared situational awareness is established through the integration and sharing of biosurveillance information and part of the larger situational awareness established by the National Operations Center Common Operating Picture.

capabilities and capability gaps of NBIC and has been created in coordination with NBIC's interagency partners.

This Strategic Plan was developed during a critical time as events[3] with implications for biosurveillance continue to threaten the nation and the world. These events are a reminder that a rigorous national biosurveillance capability is critical to enable early awareness of threats to the nation's health security and, ultimately, to save lives. These ongoing challenges signal the acute need to mitigate the impacts of intentional attacks, natural disease outbreaks, and other biological events through improved information sharing and coordinated analysis.

The *National Biosurveillance Integration Center Strategic Plan* presents a new approach to fully realize the vision of NBIC and articulates goals and objectives to fulfill its vital integration role in the national biosurveillance mission. Following extensive discussions within the federal government and with external groups, this Strategic Plan explains the approach, why it is needed, and how it seeks to achieve the mission of the NBIC and execute the vision of integrating national biosurveillance information through the National Biosurveillance Integration System (NBIS) interagency collaboration, all for the purposes of supporting better-informed decision making.

Four core disciplines have been identified as essential to the biosurveillance integration mission.[4] This Strategic Plan outlines these core disciplines as: 1) collaboration, in which governance improvements and new communication processes and policies will be pursued; 2) information integration and sharing, in which appropriate information technology (IT) systems, business rules, and partner data management/ownership verification will be a priority; 3) analysis, which requires multidisciplinary, cross-cutting, and in-depth analytic support to provide timely and relevant information to support decisions; and 4) user-defined reporting, recognizing that all aspects of NBIC's analysis and products must be tailored and customer-focused. To transform NBIC and continue to mature national capability, these core disciplines will be achieved through accomplishing NBIC's strategic goals and objectives.

Goals for a Successful Center

The strategic goals and objectives outlined in this plan are oriented around the four core disciplines:

1. **Interagency collaboration through NBIS.** As the operational entity for the NBIS, the NBIC must work more closely and effectively with interagency, state, local, territorial, tribal, and private sector stakeholders. Through the management and use of working groups, joint concept of operations (CONOPS) development, provision of technical assistance and integration infrastructures, and other collaborative tools and approaches, the NBIC will both benefit from, and contribute to, the missions of its NBIS partners.

[3] "Events" includes naturally-occurring, accidental, or deliberate biological events such as emerging infectious disease or bioterrorism

[4] Core Disciplines have been formulated based on numerous Government Accountability Office reports on biosurveillance and through internal review and discussion with key stakeholders.

Development of an NBIC CONOPS through collaboration and coordination with NBIS partners is a top priority for NBIC and will be initiated immediately upon formalization of the Strategic Plan. The NBIC CONOPS will layout the organizational structure of NBIC and NBIS and describe the specific roles and responsibilities of NBIS partners and stakeholders as they relate to NBIC. The NBIC CONOPS will also clearly define the operational objectives and provide specific operational details of the NBIS biosurveillance process.

2. **Information integration and analysis**. Consolidating information from NBIS partner surveillance systems, enhancing information gap coverage through the addition of stakeholder information, and conducting tailored, direct analysis using appropriate tools and technologies to identify and characterize biological events of national concern will make the NBIC's decision support products more relevant and useful for customers and decision makers.

3. **Effective dissemination of information.** While improved information integration and sound analysis will produce improved decision support products, effective dissemination of those products to the appropriate people in a timely fashion is equally important. Improving real time communication methods with NBIS partners and enhancing intelligence community information sharing will improve the NBIC's ability to effectively inform partners and stakeholders.

4. **Mature and strengthen the Center.** To effectively accomplish NBIC's mission through its strategic goals requires the recruitment, development, and retention of a world-class, multi-disciplinary analytic staff. In addition, NBIC must continue to work with its stakeholders to innovate new ways of leveraging existing data and models, as well as applying advanced analytics to more effectively discern early warning and awareness from available information.

Implementing the Vision

In charting the way forward, this Strategic Plan articulates an "emergent strategy" approach that allows for a series of initiatives that can be measured and validated. Specifically, strategic objectives and activities will be tested with key NBIS partners through small-scale pilot projects to develop building blocks for the operational activities of the NBIC prior to adoption. As outlined in this plan, these pilot projects, as well as other activities, will allow for greater participation at the state and local level, in the private sector, and among non-governmental organizations. Such an approach is prudent as changes in technology, the threat picture, or even in policy or governmental priorities may emerge and affect the strategy during its implementation. Implementation will be coordinated with the NBIS partners and build from the concepts, measures, and milestones outlined in this document to mature NBIC collaboration, analysis, and operations going forward.

Conclusion

Effective management of risks from biological threats and evolving events depends on early warning and shared situational awareness so that risk management decisions surrounding response and recovery are well-informed. To that end, the federal government performs biosurveillance through several domains: human, animal, plant, food, and environmental health. NBIS member agencies have roles and responsibilities related to each of the domains and NBIC

is in a unique position to support those roles and responsibilities and work collaboratively to ensure that health surveillance information in all these domains is analyzed, integrated, shared, and used to make sound risk management decisions that save lives, mitigate socioeconomic impacts, and reduce the likelihood of future reoccurring events. Most of this information does not reside within the federal government but with many biosurveillance stakeholders including state, local, territorial, and tribal (SLTT) governments, the private sector, and the international entities. There is still much to be learned from combining these different information sources.

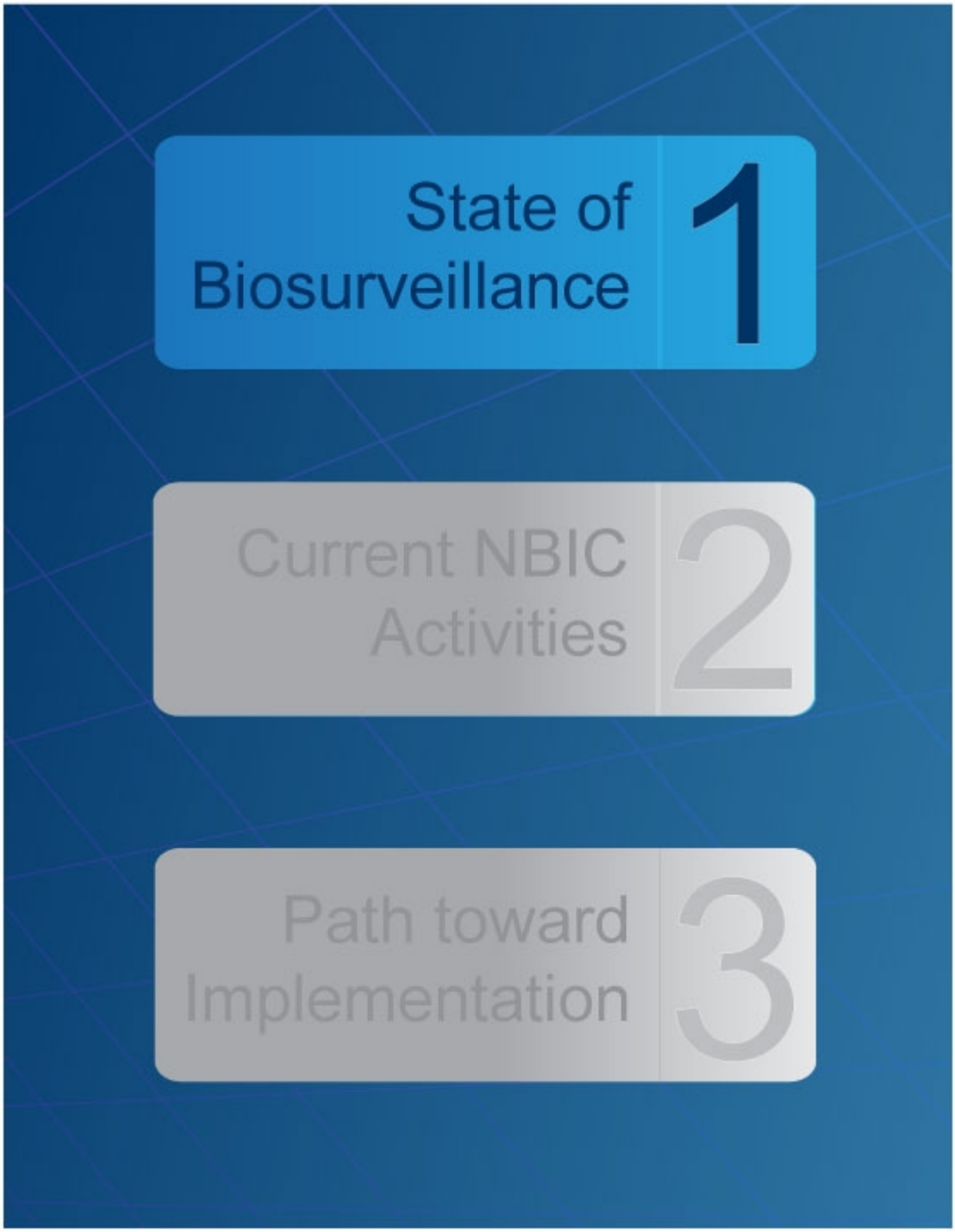
Having a strong, state-of-the-art NBIC will support these efforts on behalf of, and in collaboration with, the biosurveillance community. This Strategic Plan articulates strategic goals, objectives, and activities essential to achieving its mission. Through the NBIC, and working together with our NBIS partners, we will advance the safety, security, and resilience of the Nation through biosurveillance collaboration, analysis, and integration.

PURPOSE OF THE STRATEGIC PLAN

The *National Biosurveillance Integration Center Strategic Plan* presents a new approach to realizing the vision of NBIC. This Plan identifies core disciplines of biosurveillance integration and addresses the requirement for NBIC to define its goals and objectives necessary to fulfill its vital role in the national biosurveillance mission. This plan is grounded in legislative and presidential direction and is informed by extensive discussions, workshops, and symposiums with the biosurveillance community. As the first Strategic Plan since the establishment of NBIC, this plan explains the approach, why it is needed, and how it seeks to execute the vision of integrating national biosurveillance information.

In implementing this Strategy, some of the aforementioned assumptions and new applications will be tested with key NBIS partners through small-scale pilot projects to develop building blocks prior to adoption by NBIC. A key aspect of the implementation is integrating lessons learned from others in information sharing and best practices into the design of communication tools for stakeholders. To date, a preponderance of efforts has focused at the federal and international level, but there are recognized contributions and strengths at the state and local level, as well as private sector. For all activities outlined in the "Path toward Implementation" section, attention will be focused on the capabilities and enhancements available through strong input and integration of this information and ensuring the mutual exchange for the decision support and full situation awareness. A transformed NBIC will require flexibility, implementation of bold new approaches, and requirements that will encourage buy-in and support of the users with increased emphasis on the state and local stakeholders. When achieved, this Strategy describes a NBIC that will support each partner's mission and provide valuable and accessible information for decision making.

This document was written in coordination with the NBIS partners and is outlined in three sections. The first section describes the state of biosurveillance to include the role of the NBIC and the NBIS partners in national biosurveillance integration. The second describes the current state of NBIC and its capabilities and activities to date. Lastly, the third section outlines the goals, strategic objectives, and activities necessary to build on the current capabilities, address the challenges, and implement a path towards making success for NBIC a reality. The third section identifies new processes, products, and enabling technologies with measures and milestones for each of the activities.


State of Biosurveillance
1
Current NBIC Activities
2
Path toward Implementation
3

PART I: STATE OF BIOSURVEILLANCE

A. BACKGROUND

In 2004, the President tasked[5] the Department of Homeland Security (DHS) to develop a national biosurveillance integration system in coordination with appropriate federal departments and agencies for rapid recognition and warning of an intentional dispersal of biological agents. At the time, the nation's capability to detect biological attacks was dispersed across federal departments and agencies, each with its own mission, function, and corresponding perspective. Members of the biosurveillance community envisioned a center where information from across multiple domains and fields, from both governmental and non-governmental sources, would be integrated and analyzed. It was believed that key analysts would be able to coordinate and integrate streams of biosurveillance information rapidly and take critical, life-saving actions promptly. Although these capabilities remain dispersed across the departments and agencies, the solution is in leveraging those capabilities to enhance our ability to share and integrate the dispersed information. This vision is similar to that in the law enforcement and intelligence communities that have increased focus on information sharing and integration since the attacks of September 11, 2001.

A number of policies and directives have highlighted biosurveillance as a critical capability to the United States biodefense efforts and the importance of integrating the biosurveillance information at the federal level and, in some instances, with state and local entities. In 2004, the President issued two directives, Homeland Security Presidential Directives (HSPD) 9 and 10. Specifically, HSPD-9 directs various departments and agencies to develop surveillance systems as appropriate to the mission and domain focus of that agency and provides a reminder that biosurveillance includes more than the traditional human health information but also information from the food and agricultural sector. HSPD-10 identifies biosurveillance as a pillar of biodefense and directs Homeland Security, in coordination with the appropriate federal departments and agencies, to integrate these biosurveillance efforts. As the conversation on national biosurveillance coalesced, a program to address the need for coordination and integration was transferred from the DHS Office of Infrastructure Protection to the Office of the Chief Medical Officer in 2006. Also in 2006, the Pandemic All Hazards Preparedness Act required the U.S. Department of Health and Human Services (HHS) to develop and sustain essential public health security capabilities, including disease detection and investigation. HSPD–21, *Public Health and Medical Preparedness*¸ builds upon principles set forth in HSPD–10, explicitly defines biosurveillance, and provides a detailed explanation of what a nationwide,

> ***Biosurveillance*** is the science and practice of managing human, animal, plant, food, and environmental health-related data and information for early warning of threats and hazards, early detection of events, and rapid characterization of the event so that effective actions can be taken to mitigate adverse health, social, and economic effects.*
>
> ** Derived from biosurveillance definition in February 2010 National Biosurveillance Strategy for Human Health to include all biosurveillance domains.*

[5] The White House, "Biodefense for the 21st Century," Homeland Security Presidential Directive 10, April 28, 2004. Accessed online at http://www.fas.org/irp/offdocs/nspd/hspd-10.html

robust, and integrated biosurveillance capability must include (e.g., epidemiological surveillance) and accomplish.

National Biosurveillance Integration Center Mission, as Codified in Public Law 110-53

Codified in Sec 1101 of P.L. 110-53, the law directed the Secretary of Homeland Security to "establish, operate, and maintain a **National Biosurveillance Integration Center (NBIC)**" having a mission to (1) "enhance the capability of the Federal Government to rapidly identify, characterize, localize, and track a biological event of national concern and disseminate alerts and other information to Member Agencies and, in coordination with them to agencies of State, local, and tribal governments to enhance the ability of such agencies to respond to a biological event of national concern" and, (2) "oversee the development and operation of the National Biosurveillance Integration System (NBIS)."

When Congress passed the Implementing Recommendations of the 9/11 Commission Act of 2007 (Public Law 110-53), one of the key provisions was to codify the federal government's expectations for biosurveillance integration and coordination. The law directed the Secretary of Homeland Security to "establish, operate, and maintain a National Biosurveillance Integration Center (NBIC)" having a mission to (1) "enhance the capability of the federal government to rapidly identify, characterize, localize, and track a biological event of national concern[6] and disseminate alerts and other information to Member Agencies and, in coordination with them to agencies of state, local, and tribal governments" and, (2) "oversee the development and operation of the National Biosurveillance Integration System (NBIS)."

Additional Presidential Directives, legislation, and department and agency strategies continue to shape the federal government's biosurveillance efforts. These include, but are not limited to, HHS' 2009 *National Health Security Strategy* and the 2010 *National Biosurveillance Strategy for Human Health.* In 2010, the Secretary of DHS established the first Quadrennial Homeland Security Review to outline the strategic framework to guide the activities of participants in homeland security toward a common end. The review calls out the need to focus on maturing and strengthening the homeland security enterprise and aligns well with NBIC's focus on enhancing a broad national culture of cooperation to "prevent and protect against terrorism" and "ensuring resilience to disasters", two key missions of the homeland security enterprise. In 2011, the Food and Drug Administration (FDA) Food Safety Modernization Act specifically directs the HHS Secretary, through the Director of the Centers for Disease Control and Prevention (CDC), to enhance foodborne illness surveillance systems by "integrating foodborne illness surveillance systems and data with other biosurveillance and public health situational awareness capabilities at the federal, state, and local levels, including by sharing foodborne illness surveillance data with the National Biosurveillance Integration Center; and other activities as determined appropriate by the Secretary.[7]" This further highlights the necessity for information integration and sharing across multiple domains to provide improved broad situational awareness potential biological events.

In 2011, the President issued the *Presidential Policy Directive (PPD) 8*: *National Preparedness* with the goal of strengthening the security and resilience of the United States through systematic

[6] Public Law 110-53: The term 'biological event of national concern' means—''(A) an act of terrorism involving a biological agent or toxin; or ''(B) a naturally occurring outbreak of an infectious disease that may result in a national epidemic."
[7] Public Law 111-353, section 205(b)(1)

preparation for the threats that pose the greatest risk to the security of the Nation. As deliverables from PPD-8, the National Preparedness Goal and National Planning Frameworks highlight the importance of biosurveillance, integration, and information sharing within the Protection mission area.[8] Most recently, the President released the *National Strategy for Biosurveillance* which sets forth the United States Government approach to strengthen our national biosurveillance enterprise and describes a core set of functions critical to the National Strategy's success. The NBIC Strategic Plan is aligned with the National Strategy's concepts and approaches and rooted in the same goal to provide critical information and ongoing situational awareness that enables better decision making.[9]

B. ESTABLISHING A COMMON UNDERSTANDING

As Congressionally directed, NBIC resides within the DHS Office of Health Affairs (OHA) to coordinate the comprehensive integration of national biosurveillance to better inform homeland security situational awareness. NBIC is the coordinating group responsible for supporting the NBIS partners and establishing a capability to integrate information across the public and private domains. Such coordination requires the collaboration of stakeholders with differing missions, organizational cultures, and nomenclature to effectively support the response to events using near real time information gathered from multiple sources, analyzed by experts, and presented in usable formats across the NBIS to the nation's decision makers.

NBIC, largely through interactions with the NBIS partners, collaborates with the interagency community to acquire, integrate, analyze, and disseminate information pertaining to emerging biological events and their impact on U.S. interests.

National Biosurveillance Integration System Mission

The National Biosurveillance Integration System (NBIS) enhances the identification, location and tracking of biological events potentially impacting homeland security by uniquely integrating information and leveraging interagency communications and relationships. NBIS supports prevention and mitigation of such events by providing timely notifications and ongoing situational awareness to enhance response of government agencies. *(Established by the NBIS partners and effective June 30, 2010)*

The NBIS is a consortium of federal partners that was established to rapidly identify and monitor biological events of national concern. NBIS collaborates among federal partners and state stakeholders to collect, analyze, and share human, animal, plant, food, and environmental biosurveillance information with the NBIC. As described in the P.L. 110-53 in 2007, NBIS was originally intended to be an information technology (IT) system that enabled integration of numerous complex, structured and unstructured data relevant to biosurveillance. However, since 2007, it is clear that comprehensive data sources as envisioned in P.L. 110-53 either do not exist or are subject to a variety of information sharing challenges that make a large IT-centered solution less feasible than originally imagined. However, NBIC does currently field a limited IT system, the Biosurveillance Common Operating Network (BCON), which collects and shares open source

[8] PPD-8 defines five preparedness mission areas—Prevention, Protection, Mitigation, Response, and Recovery. Information regarding the deliverables of PPD-8 are located online at http://www.fema.gov/prepared/ppd8.shtm.
[9] The White House, *National Strategy for Biosurveillance*, July 2012. Accessed online at http://www.whitehouse.gov/sites/default/files/National_Strategy_for_Biosurveillance_July_2012.pdf

information in support of its mission. NBIC and its partners now describe NBIS in terms of the biosurveillance community of federal partners as opposed to an IT system. In 2010, the NBIS partners established a formal mission statement to solidify their role with regards to NBIC.

I. UNDERSTANDING INTEGRATION AND SHARED SITUATIONAL AWARENESS AS AN UNIQUE ROLE OF THE CENTER

The goal of an integrated biosurveillance effort across public and private sectors is hindered by the lack of a standard scope for biosurveillance. Before significant progress is made, a common understanding of terms used between public and private biosurveillance entities must be achieved. HSPD-21 defines *biosurveillance* as "the process of active data-gathering with appropriate analysis and interpretation of biosphere data[10] that might relate to disease activity and threats to human or animal health – whether infectious, toxic, metabolic, or otherwise, and regardless of intentional or natural origin – in order to achieve early warning of health threats, early detection of health events, and overall situational awareness of disease activity."[11] NBIC proposes to incorporate the HSPD-21 concepts and adapt and expand the HHS definition of biosurveillance put forth in the 2010 *National Biosurveillance Strategy for Human Health* to reflect the cross-domain nature of biosurveillance and its ability to inform mitigation efforts beyond health effects. ***Biosurveillance*** *is the science and practice of managing human, animal, plant, food, and environmental health-related data and information for early warning of threats, early detection of events, and rapid characterization of events so that effective actions can be taken to mitigate adverse health, social, and economic effects*. NBIC is foremost an integrator of biosurveillance information as it relates to information shared through a collaborative process where information exchange agreements have been developed and are followed. NBIS partners integrate data within their biosurveillance domain, and share this information with NBIC after being analyzed by their subject matter experts.

Given the importance of integration in NBIC's mission and activities, providing a working definition of what that means is important. Information integration is the combining of information from different sources and providing partners and stakeholders with a synthesized, unified view of the information, and what it could mean. Information integration has a greater impact than information aggregation alone, which is just the collecting of information to give users a single place of access. Integration takes this a step further by providing a broad perspective of the impact of the combined whole of aggregated information.

Consequently, NBIC is more than a repository for reports from itself and other NBIS partners. Although this is a useful function, NBIC (in full collaboration with its partners) connects, correlates, and contextualizes (not just aggregates) information through the production and dissemination of its analytic products. Done well, integration requires constant information updates, strong collaborative relationships, and strong analytic expertise. NBIC's integrating

[10] "Biosphere data" can be divided into information about human, animal, and agricultural populations, and biosurveillance thus consists of health surveillance on each of these populations. Cited from Ronald D. Fricker, "Biosurveillance: Detecting, Tracking, and Mitigating the Effects of Natural Disease and Bioterrorism," Naval Post Graduate School (2010): 2.
[11] The White House, "Public Health and Medical Preparedness," Homeland Security Presidential Directive 21, October 18, 2007. Accessed online at http://www.fas.org/irp/offdocs/nspd/hspd-21.htm

role enhances the federal government's ability to provide early warning and shared situational awareness beyond information aggregation.

> ***Situational awareness*** is the perception of elements in the environment within a given time and space, the comprehension of their meaning, and the projection of their status in the near future.*
>
> ** Mica Endsley, Toward a theory of situation awareness in dynamic systems (Human Factors, 1995b*

Situational awareness is broadly defined as the perception of elements in the environment within a given time and space, the comprehension of their meaning, and the projection of their status in the near future.[12] As highlighted in HSPD-21, biosurveillance, at a national level, is an important part of the process for achieving shared situational awareness of the biological event of national concern. ***Shared situational awareness*** *is best understood as a common picture or understanding achieved cooperatively by entities that integrate mission-essential, overlapping portions of their individual situational awareness for a unified purpose.*[13] In the context of this document, shared situational awareness is established through the integration and sharing of biosurveillance information, and is part of the larger situational awareness established by the National Operations Center (NOC) Common Operating Picture (COP).

Emerging events require a set of high-consequence decisions be made based upon preliminary, incomplete, and often inconclusive information across multiple domains including human, animal, plant, food and environmental. Each department and agency (federal, state, and local) has a primary mission, often focused on a single domain, and subsequently a set of decisions and actions that must be made in a shared risk environment. Shared situational awareness of the broader biological domain established from integrating information across the individual missions may provide insights that cannot be gleaned in isolation. The shared analysis may enhance the likelihood of identifying an event earlier and with more certainty. Going forward, NBIC will remain the integrator of national biosurveillance information by fostering an improved environment for shared situational awareness and decision support within the biosurveillance sphere.

C. CORE DISCIPLINES OF INTEGRATED BIOSURVEILLANCE

This Strategic Plan is the result of a deliberative process examining current capabilities and capability gaps of NBIC and has been created in coordination with the NBIS partners and other key stakeholders. Based on these efforts, this plan outlines four core disciplines that have been identified as essential to the biosurveillance integration mission.[14] These core disciplines, which include collaboration, information integration and sharing, analysis, and user-defined reporting are critical to successful biosurveillance and reflected in the Strategic Goals and Objectives discussed in detail in Part III: Path toward Implementation.

---

[12] Mica Endsley, Toward a theory of situation awareness in dynamic systems (Human Factors, 1995b), 32-64.
[13] Concept established through integration of two theories: Endsley, M. R. Designing for Situation Awareness: An Approach to User-Centered Design (CRC Press, 2003) and Nofi, Albert A. Defining and Measuring Shared Situational Awareness (Center for Naval Analyses Corporation, 2000).
[14] Core Disciplines have been formulated based on numerous Government Accountability Office reports on biosurveillance and through internal review and discussion with key stakeholders.

Collaboration: Open and mutual communication, cooperation, and trust is necessary for successful information sharing among NBIS partners.[15] NBIC must leverage the expertise of its NBIS partners and establish processes that provide access to timely information and the appropriate personnel from these partner agencies. Clarity on agency roles and responsibilities as relevant to their relationship with NBIC will improve issues of overlapping agency authorities for integration. Overall, NBIC must foster a trusted information sharing environment that encourages members in the biosurveillance community to share and discuss information so incidents can be identified and assessed earlier.

In order to implement improvements to NBIC, OHA and the NBIS partners will be fully engaged in the planning, development, and deployment activities of NBIC. Particularly important to the ongoing success of national biosurveillance integration is the governance of the biosurveillance community. The NBIS partners have expressed that a shared, participatory governance model is desired. Governance will be important to address early on to ensure full participation and build trust with the stakeholders in order to implement a successful NBIC.[16] As noted in detail in Strategic Objective 1.2, an NBIC CONOPS will be created through a collaborative interagency process. The CONOPS will address roles and responsibilities of the NBIC in conjunction with stakeholders, including customers, distribution of products, and the process for sharing information both pre- and post- event identification (before and after resources and capabilities outlined in the National Response Framework (NRF) are activated). The CONOPS will define procedures for aggregating, integrating, and analyzing biosurveillance data both pre- and post-event, and will also address and clarify the role of the NBIC regarding other standing protocols.

Information Integration and Sharing: Information integration and sharing are integral components to developing improved individual situational awareness and shared awareness among partnering organizations.[17] Establishing information needs and information sharing agreements driven by the information owner and determining the value proposition for the NBIS partners are essential for success of NBIC. As necessary, NBIC will adopt IT platforms designed to accept information from different platforms and provide ways to integrate that information. This will enable consistent and timely information sharing that can be leveraged by NBIS partners with minimal capability or the infrastructure to support a biosurveillance system. In collaboration with the lead federal partners, NBIC will support the broadly recognized need to develop a federal registry of information sources, systems, or programs to lay the foundation for sharing.[18]

Analysis: A fully effective biosurveillance system is not only dependent on the clear delineation of information requirements and appropriate information sources but also on the robust analytic

[15] Collaboration as a Core Disciple of Integrated Biosurveillance is in alignment with the *Planning* Core Capability of the PPD-8 National Preparedness Goal.
[16] Recommendation identified in the Government Accountability Office, *Report on Biosurveillance: Developing a Collaboration Strategy is Essential to Fostering Interagency Data and Resource Sharing*, GAO 10-171(Washington, DC: GAO, 2009).
[17] Information Integration and Sharing as a Core Disciple of Integrated Biosurveillance is in alignment with the *Public Information and Warning* Core Capability of the PPD-8 National Preparedness Goal
[18] Information regarding this activity as led by the Centers for Disease Control and Prevention is highlighted in the GAO-10-645: *Report on Biosurveillance: Efforts to Develop a National Biosurveillance Capability Need a National Strategy and a Designated Leader'* (Washington, DC: GAO 10-645, 2010).

schema and expertise essential to support the discovery of emerging threats. Taking advantage of the current efforts in new analytic tools and processes within the research community and surveillance daily operations, as well as new computing technologies, will help build more efficient and customer-defined decision support. These user-defined responsive tools will enable analysts to more easily conduct analysis but do not replace their essential expertise in this process. Multidisciplinary, cross-cutting, and in-depth analytical support within NBIC and across agencies is necessary to provide real time and ongoing analyses to provide timely, relevant information supporting decisions of senior leaders.[19] Examination and testing of these analytic and computing tools in real time biosurveillance activities with networked subject matter expert analysts is a high priority milestone for a successful NBIC.

User-Defined Reporting: With the final value and outcome of an efficient NBIC focused on providing subject matter expert (SME) analysts and leaders at all levels with the best consolidated information for decision making, it must first be determined what information the NBIS partners need and what they can provide among the NBIS partners. Those needs will be compared to the senior leaders needs, and the NBIS will collectively determine solutions for how to best provide the requested information in multiple formats for a diverse audience of end users. Currently, NBIC ingests a large quantity of open source information on any health event, however minor or significant, in any geographic location. Reporting should integrate and analyze the vast open source information and provide usable insights of incidents that might not be seen in isolation. NBIC must continue to improve its reporting and tailor its products to provide decision making support for SME analysts, senior leadership, and policymakers. NBIC must identify who the "customer" of information integration is – the targeted leadership within agencies, outside agencies, and in state, local, territorial, and tribal (SLTT) governments.

NBIC reports should include where possible, analysis of linkages, causality, trends, and information visualization to guide decision making. Many information sharing experts have addressed interfaces, graphs, visual analytics, mapping and other information sharing mechanisms that will be explored in order to best communicate NBIC analyses.

[19] Analysis and User-Defined Reporting as Core Disciples of Integrated Biosurveillance is in alignment with the *Operational Coordination* Core Capability of the PPD-8 National Preparedness Goal.


State of Biosurveillance
1
Current NBIC Activities
2
Path toward Implementation
3

PART II: THE NATIONAL BIOSURVEILLANCE INTEGRATION CENTER DAILY OPERATIONS

A. CURRENT OPERATIONS OVERVIEW

In its national biosurveillance role, the NBIC functions as an integration center. Memoranda of understanding (MOU), interagency agreements, and standard operating procedures have shaped how the NBIC conducts daily biosurveillance integration. As part of NBIC's emerging strategy approach, the interaction with its stakeholders will continue to influence the evolution of NBIC daily operations. The following overview captures how NBIC operates today.

A Day in the Life at the Center

Continuous biosurveillance monitoring activities produce the baseline that permits NBIS partners, including NBIC, to provide indications and warnings. This results in a shared situational awareness and subsequently assists forecasting of future disease incidence, impact, and necessary mitigation measures by NBIS partners. Through collaboration, information integration and sharing, and analysis, NBIC provides stakeholder-defined biosurveillance reporting. This section will focus solely on the current, daily NBIC operations that include both steady state continuous open source biosurveillance and near real time biosurveillance decision support capabilities.

B. CONTINUOUS BIOSURVEILLANCE: A DAILY NBIS COLLABORATION

NBIC performs continuous open source biosurveillance while simultaneously collaborating with its NBIS partners. These partners provide subject matter expertise that NBIC uses in its daily operations, the integration of national biosurveillance information.

NBIS Partners

- Department of State
- Department of Justice
- Department of Interior
- Department of Commerce
- Department of Agriculture
- Department of Defense*
- Department of Health and Human Services
- Department of Transportation
- Department of Veterans Affairs
- Department of Homeland Security*
- Environmental Protection Agency
- U.S. Postal Service

DOD and DHS are two of the 17 member agencies of the Intelligence Community

I. Daily Analytic Production Process

Surveillance begins each weekday morning by reviewing information and data collected since the previous review. Information regarding disease outbreaks and biological events of concern or interest is collected manually 24 hours a day by NBIC analysts and OHA Watch Officers in the NOC. Potentially relevant information is also collected through the use of the Biosurveillance Common Operating Network (BCON), an automated information gathering tool that ingests data from tens of thousands of information feeds. Information collected by BCON includes such varied sources as open source media, information aggregation and dissemination systems (such as ProMed and OIE - World

Organization for Animal Health), NBIS partner input, individual internet searches, and specialized portals.

The overall process described above relies heavily on analyst experience and subject matter expertise, as well as voluntary interagency collaboration. For this expertise, the NBIC has two sources that allow collaboration with subject matter expertise from lead agencies to inform national biosurveillance integration. The first is the aforementioned broader NBIS community that includes the other federal partners, plus state and local government stakeholders. In addition, the NBIC can access OHA expertise residing outside the NBIC.

II. Biodefense - NBIC Relationship within OHA and the NOC

OHA leads DHS' biodefense activities[20], to include responsibilities outlined in the HSPD-10, *Biodefense for the 21st Century*, consistent with formal DHS planning processes, end-to-end planning for biological attacks, biosurveillance integration, operational early warning systems, and veterinary, food and agro-defense.

The NBIC partners with OHA's BioWatch, Chemical Defense Program, and the Food, Agriculture, and Veterinary Defense (FAVD) branches. These partnerships allow NBIC to leverage in-house expertise and advance information sharing through these OHA programs with additional federal and SLTT stakeholders.

Under the Office of Operations Coordination and Planning, the NOC is the primary national-level hub for all domestic situational awareness and incident response coordination. In addition to the OHA programs previously mentioned, OHA maintains constant staffing of the OHA Watch Desk within the NOC to serve as a conduit for information exchange between OHA, DHS components, and the interagency. NBIC information sharing is coordinated with the OHA Watch Desk and routine biosurveillance reporting is shared with the NOC. Some NBIS partners also maintain a physical presence at watch desks within the NOC.

During routine operations within the NOC, NBIC analysts perform the majority of routine staff work involved in biosurveillance integration through direct interaction via phone calls and emails with designated peers in other government agencies during normal working hours. At all hours, the Public Health Service officers staffing the OHA Watch Desk perform associated biosurveillance functions in coordination with NBIC personnel and personnel from the partner agencies working within the NOC. As these interactions are currently dependent upon the specific partners involved and the information sought, a detailed CONOPS for NBIC interaction with NBIS partners through the NOC is needed and proposed in this document (see Strategic Objective 1.2). Some partners prefer direct analyst-to-analyst communication to perform staff work as efficiently as possible during routine operations and request the use of the NOC's formal operations center-to-operations center request for information (RFI) process be limited to

[20] According to the Delegation to the Assistant Secretary from the DHS Secretary July 24, 2008, the authority includes but is not limited to (1) leading DHS' biodefense activities, to include oversight and management for implementation of HSPD-10; (2) managing DHS' operational biodefense programs.

significant events or unusual requests. Other partners prefer that all communication be routed and logged through the formal NOC RFI process.

During the initial stages of a potentially significant biological event, the NBIS Protocol may be activated, which generates an interagency teleconference to communicate and gather biosurveillance-related information among federal agencies when a situation meets one or more of the established threshold criteria. If there are any indications of a nefarious or potential intentional event, NBIC will immediately notify the FBI.

When the appropriate senior leadership does decide that a biological event has risen to a level of concern sufficient to form a Crisis Action Team (CAT) within the National Operations Center (NOC), interagency information exchange is then coordinated through the NOC CAT in accordance with established procedures. The NBIC ceases formal, direct interagency information coordination for the event and functions as a member of the CAT through the designated representative(s) (see Strategic Objective 3.1).

C. REAL TIME BIOSURVEILLANCE DECISION SUPPORT CAPABILITIES

The other element of the NBIC's daily biosurveillance effort is to provide decision making support in as near to real time as attainable. Continuous biosurveillance forms the baseline that allows recognition of indicators that an event may be developing or is crossing a threshold to becoming a biological event of national concern. Since continuous biosurveillance is ongoing across all NBIS partners, the NBIC is positioned as a hub for information sharing. The NBIC's ability to integrate and analyze information and communicate effectively the shared awareness of a situation enables leaders to make better-informed decisions, even in the face of incomplete or constantly changing information.

I. Rapid Turnaround Analyses

A major value of the NBIC is its ability to provide analysis in near real time for questions posed by the NBIS partners, DHS leadership, and state and local government officials. The NBIC is frequently charged with providing short turnaround, expert responses to requests from senior federal leadership. NBIC SMEs, using available expertise and resources, collaborate with SMEs from NBIS partner agencies to provide the most complete response possible given the time frame. Examples of products delivered include such items as subject-specific papers, verbal briefings, expert opinions or perspectives, and document reviews.

II. Information Sharing for Decision Support

NBIC prepares and distributes reports for a variety of audiences. These reports include:

- Federal Biosurveillance Common Operating Picture (BCOP) Reports: subject-specific reports available to more than 500 users from multiple federal agencies via the NBIC Homeland Security Information Network (HSIN) portal.

- SLTT BCOP Reports: Biosurveillance reports made available to SLTT stakeholders via the Minerva HSIN, Health Security Intelligence Enterprise HSIN, and BioWatch portals.
- Reporting and Monitoring List: daily synopsis of the most critical issues being tracked by the NBIC as well as other items of interest such as recently posted BCOP reports. The product is distributed by the OHA Watch Desk at the NOC to more than 500 federal government officials and redistributed by the DHS Office of Operations Coordination & Planning to a broader distribution list of federal officials.
- NBIC General Disease Infodoc: a group of documents and reports with corresponding links identified by NBIC analysts as having relevance to the NBIS mission based on interagency-developed Critical Information Requirements (CIRs). It is distributed daily and with the agenda prior to the weekly federal interagency call. The analysts generate the Infodoc using BCON.
- HSIN Operational Analytic Exchange: Permits secure but informal correspondence and collaboration regarding raw information for NBIS member collaboration in an unclassified environment.

III. Personnel Support to DHS Crisis Response Teams

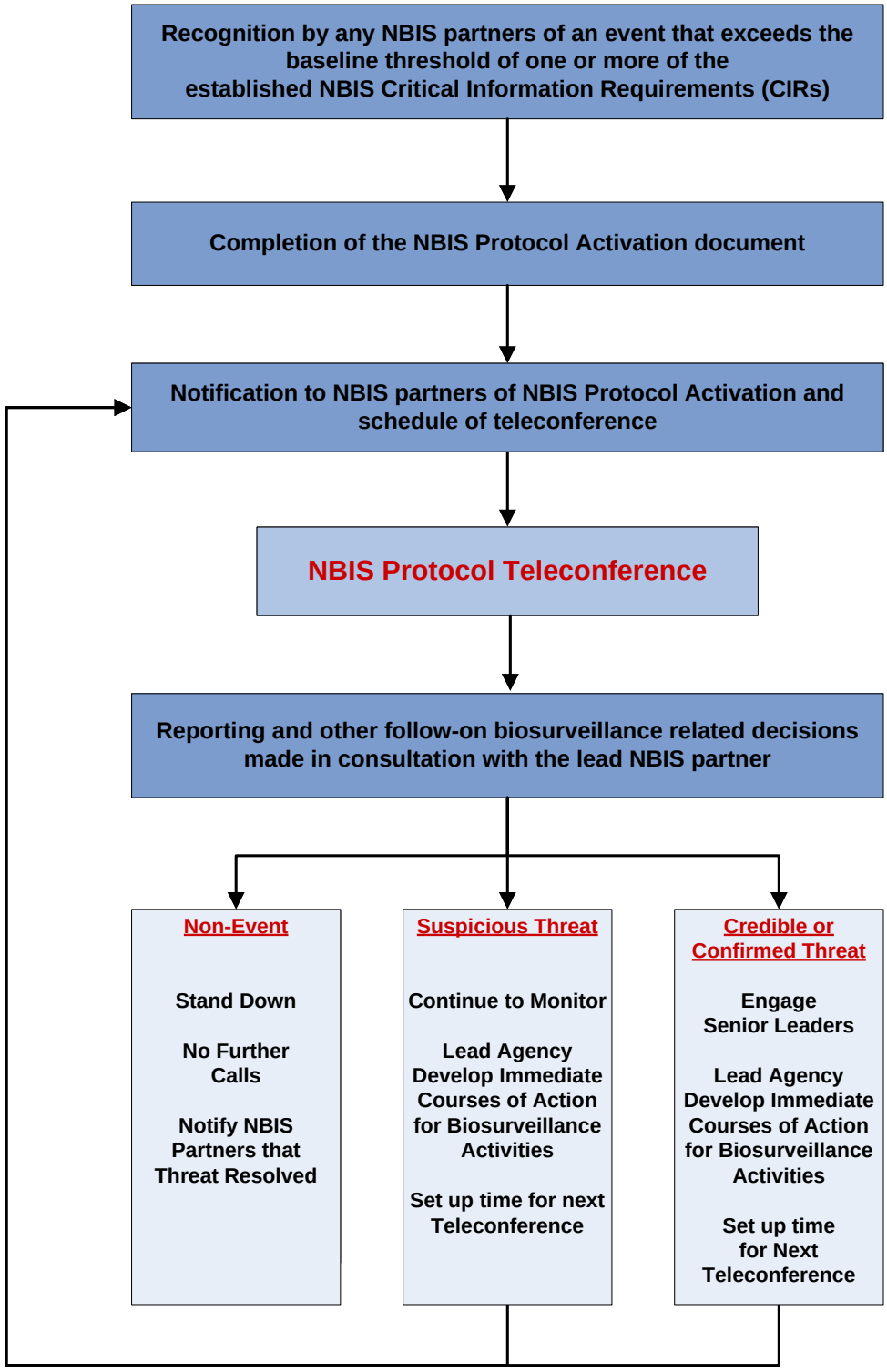
NBIC has periodically provided analyst/SME personnel to temporary support teams formed by DHS to respond to potential crisis events. These crisis response teams form the DHS component of the interagency response efforts. Past examples include the 2009 H1N1 outbreak and the 2010 Deepwater Horizon oil spill.

IV. NBIS Protocol Activation

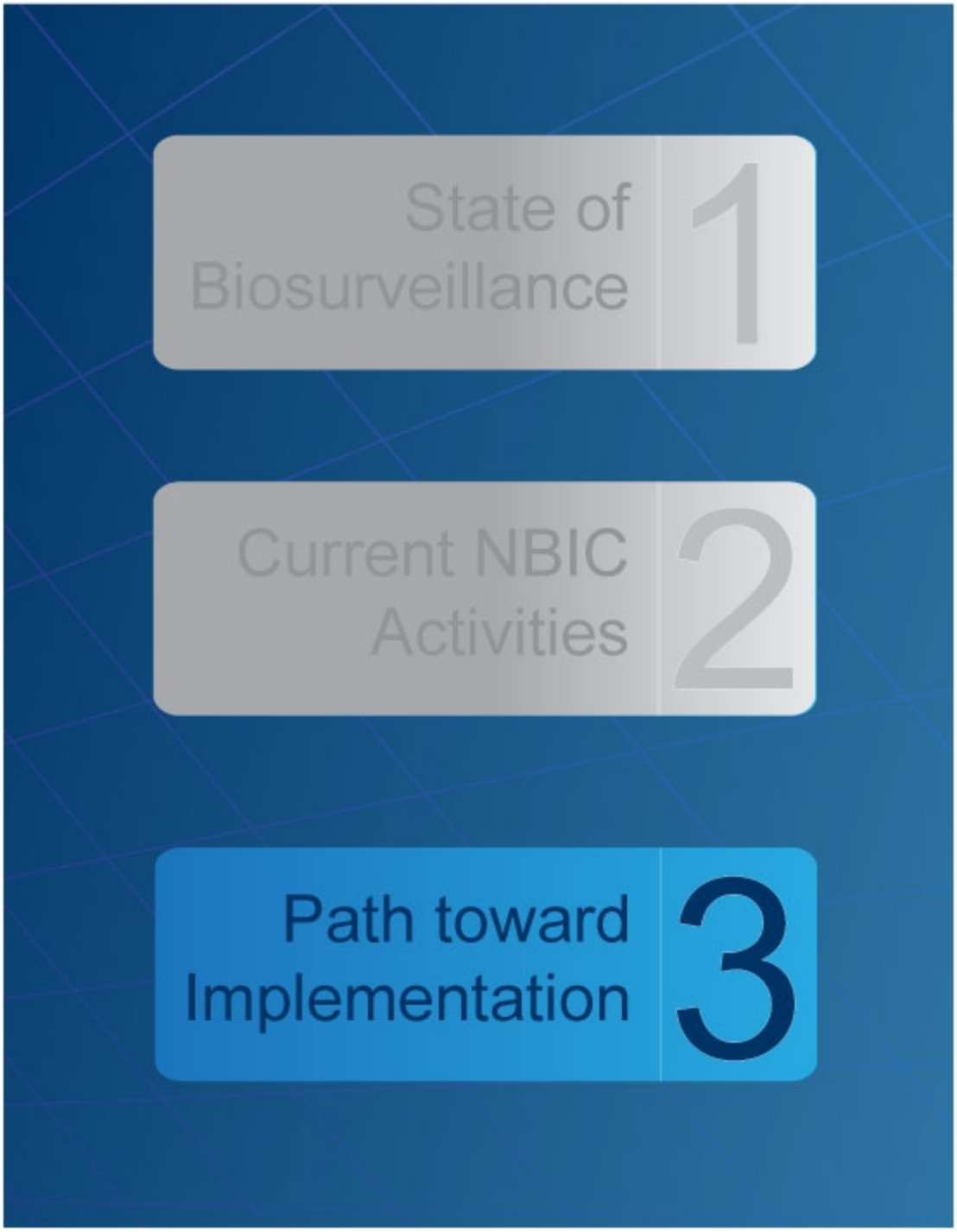
An important aspect of NBIC's information sharing and coordination role is its ability to activate the NBIS Protocol to include alerting the NBIS partner agencies and generating Spot Reports.

NBIS Protocol. The NBIS Protocol is a mechanism to bring federal NBIS partners together on a short-notice teleconference to share information on a potentially significant biological event. It can be initiated at the request of any NBIS partner and is an example of a unique capability of the NBIC that helps enable national biosurveillance integration. The Protocol is activated when a situation meets one or more of the threshold criteria and is requested by a NBIS agency. It will be used as outlined in the decision tree below.

NBIS Protocol Flow Chart



Value Added. NBIS Protocol activations demonstrate the ability of the NBIC to rapidly bring together subject matter experts across the federal government representing the human, animal, plant, food, and environmental domains. The purpose of the Protocol activation is to ensure information is shared across the NBIS and assess that information in order to characterize an unfolding event and provide early warning in the case of a potential biological event of national concern. The NBIS Protocol provides a forum for timely national biosurveillance integration that enables information sharing early in a biological event's discovery and development phase to facilitate information analysis and provide reports for decision makers. Ultimately, this early decision making support helps to mitigate the impact that the biological event could have on the nation to include decreasing the time of response as well as decreasing the overall duration and severity of a biological event. By quickly bringing together the whole of the federal biosurveillance enterprise, the Protocol enhances the goal of timely and integrated national biosurveillance.


State of Biosurveillance
1
Current NBIC Activities
2
Path toward Implementation
3

PART III: THE PATH TOWARD IMPLEMENTATION (FY14 – FY18)

A. STRATEGIC GOALS AND OBJECTIVES

NBIC Strategic Vision:

Advance the safety, security, and resilience of the Nation by leading an integrated biosurveillance effort that facilitates early warning and shared situational awareness of biological events.

NBIC Mission:

Enable early warning and shared situational awareness of acute biological events and support better decisions through rapid identification, characterization, localization, and tracking.

According to the 2010 DHS Quadrennial Homeland Security Review, "ultimately Homeland Security is about effectively managing risks to the Nation's security."[21] With risk defined as the likelihood and consequences of potential unwanted events,[22] managing risks from man-made or naturally-occurring biological events such as bioterrorism or emerging infectious disease is difficult to accomplish through activities that attempt to reduce an event's likelihood of occurrence. Instead, activities that mitigate these risks largely focus on reducing, managing, or limiting the consequences of biological events once they begin to occur. To do this effectively requires advanced warning that an event is occurring, combined with continued situational awareness throughout the event to enable effective decision-making with regards to what management actions should be taken.

The mission of the NBIC is fundamentally about enabling early warning capabilities alongside continued situational awareness and disseminating information to the right authorities in a timely fashion. As described in detail in this section, NBIC Strategic Goals, Objectives, and Activities represent a balance of efforts that produce early warning and situational awareness through information ingestion and analysis, synthesis of existing government and open-source information, and innovation of advanced analytics and models; all in collaboration with federal, SLTT, private, and international sectors. The NBIC Goals and Objectives outlined below intersect these sectors with milestones to measure their success.

The development of the *National Biosurveillance Integration Center Strategic Plan* provides planning guidance for both near term and FY14 - FY18 budget direction. The five-year plan will be updated annually. The publication of this plan within FY12 is the result of a process examining current capabilities and capability gaps of NBIC in collaboration with NBIS stakeholders.

[21] U.S. Department of Homeland Security. *Quadrennial Homeland Security Review Report: A Strategic Framework for a Secure Homeland.* Page 2. February 2010.
[22] U.S. Department of Homeland Security. *DHS Risk Lexicon.* September 2010.


Strategic Vision
Advance the safety, security, and resilience of the nation by leading an integrated biosurveillance effort that facilitates early warning and shared situational awareness of biological events.
Mission
Enable early warning and shared situational awareness of acute biological events and support better decisions through rapid identification, characterization, localization, and tracking.
Strategic Goals
1. Build and maintain enduring processes to support interagency collaboration and operations through the NBIS and other partnerships.
2. Enhance federal government ability to rapidly identify, characterize, localize, and track a biological event of national concern.
3. Enhance federal government ability to disseminate alerts and other information to partners.
4. Mature and strengthen NBIC into a world-class biosurveillance analysis and integration organization.
Objectives
1.1 Maintain interagency working group
1.2 Continue to evolve Concept of Operations with NBIS Partners
1.3 Provide the infrastructure for integration of systems and partners
1.4 Provide technical assistance to contributing partners
2.1 Consolidate information from available relevant surveillance systems maintained by NBIS partners
2.2 Seek state, local and private sector information to enhance coverage of critical gaps
2.3 Incorporate an IT system that uses the best available tools to identify, characterize, localize, and track biological events of national concern
3.1 Mature and strengthen real-time communication and 24 hour support to the NOC
3.2 Implement and execute information sharing with intelligence entities
4.1 Recruit, develop, and retain a multi-disciplinary analytic staff to develop and operate the NBIC
4.2 Recruit technical expertise in bio-specific data analysis and interpretation
4.3 Support growth and development through training opportunities

B. AN EMERGENT STRATEGIC PLAN: VISION FOR THE NEXT FIVE YEARS

This plan was developed through a deliberative process that includes views from biosurveillance stakeholders as well as the informed inputs of outside studies. This is an emergent strategic plan that began with the NBIC's initial operational capability in September 2008 and reflects the collective experience of a body of partners and stakeholders both inside and outside of NBIS. A previous model does not exist. This plan provides direction to OHA and the NBIC and will be revised periodically as the biosurveillance community and requirements evolve. This direction reflects the maturing and strengthening of NBIC in its integration role in national biosurveillance.

OHA and NBIC have been conducting an analysis of NBIC capability gaps. Filling these gaps will enhance capabilities in collaboration, information integration and sharing, analysis, and user-defined reporting and integration. These challenges will be overcome by a combination of policy, mitigation strategies, and funding solutions. This plan identifies specific programmatic milestones required to accomplish NBIC's mission.

While this implementation plan targets the five year period from FY14 to FY18, OHA has undertaken several initiatives in the near term to respond to identified capabilities gaps. Some of these initiatives are in the form of pilot programs, which focus around specific scenarios across the food, agriculture, and human health/emerging disease events and also on functional areas such as state and local integration, usage of social media, and advanced analytics. These initiatives will focus on making unique contributions to NBIS by advancing the collective knowledge in various, unexplored topic areas to develop and validate new tools for use across the NBIS that fill current gaps and minimize duplication of efforts across NBIS partner activities. NBIS partners will provide input into the pilots and metrics for success. The five year implementation plan including the FY12 – FY13 near–term initiatives and pilot programs are outlined below.

The following strategic goals and objectives are derived from the Congress-defined NBIC mission in P.L. 110-53. Each goal incorporates the core disciplines of collaboration, information integration and sharing, analysis, and user-defined reporting to different degrees depending on the goal.

STRATEGIC GOAL 1:

Build and maintain enduring processes to support interagency collaboration and operations through the NBIS and other partnerships.

As a core discipline, collaboration with our partners and stakeholders is essential for successfully achieving national biosurveillance integration. Collaboration is through both the NBIS and the broader biosurveillance community. NBIC must work closely and effectively with federal, SLTT, and private sector entities. The following objectives and activities will guide and support the NBIC in accomplishing this goal.

Strategic Objective 1.1
Maintain an interagency group to facilitate interagency cooperation and to advise the Director of the NBIC regarding recommendations to enhance the biosurveillance capabilities of DHS and the NBIS.

Activity 1.1.1: Revised NBIC Governance Model

NBIC will adopt a model of governance that provides for both centralized and distributed responsibilities, recognizing the importance of considering input from key stakeholders.[23] Within this model, a new NBIC Advisory Board will be created to review, consult, and provide feedback about enterprise strategies and information management policies (e.g., establishing a hierarchy of business rules for use of analyzed sources, determining defensibility of input information, establishing a biosurveillance lexicon), setting of priorities as well as performance metrics of the enterprise and the system to monitor and evaluate the effectiveness of collaboration.[24] The Advisory Board replaces the NBIS Interagency Oversight Council (NIOC) in order to expand responsibilities and involvement in governance to the broader federal biosurveillance community. Participation will go beyond the existing federal NBIS partners with a goal of being more inclusive than the current model. It will include the White House National Security Staff (NSS) and key partners across the federal interagency with biosurveillance mission areas essential for shared situational awareness, potentially including the representatives of the Sub-Interagency Policy Committee for Biosurveillance and the current NIOC representatives. The Board will be implemented in FY12, with initial convening in early FY13.

One of the first tasks of the Advisory Board will be to identify functions that would be the primary responsibility for implementation (e.g., information management responsibilities common to the entire system, establishing architecture and technology standards, and operation of an integration center/network security) by the operating entity, the NBIC. With consideration that it would be impractical for the senior level leadership comprising the NBIC Advisory Board to complete all of these tasks, the existing NBIS Interagency Working Group (NIWG) will assist as requested by the Advisory Board members.

The Advisory Board will initially be convened by the NSS. Once all members have fully agreed to a governance structure, the NSS will transition its role as convener of the Advisory Board to OHA. The Board will then decide upon a co-chair to serve with the OHA Assistant Secretary[25] who will rotate among the Board members to ensure that different agency needs are represented and the enterprise has a shared understanding of the issues to inform operations and evaluate success. The Advisory Board can also establish working groups as needed or as requested by the members for certain operational issues. These working groups could be assigned a specific task, or set up for specific event activities, depending on the

[23] OHA recognizes the contributions the Biological Indications and Warning Analytic Community (BIWAC) has made and continues to make and will incorporate lessons learned as appropriate.
[24] Recommendation identified in the Government Accountability Office, *Report on Biosurveillance: Developing a Collaboration Strategy is Essential to Fostering Interagency Data and Resource Sharing*, GAO 10-171(Washington, DC: GAO, 2009).
[25] The addition of a co-chair will not alter or impede the OHA Assistant Secretary's or NBIC's statutory authorities outlined in the 6 U.S.C. § 321e and 6 U.S.C. § 195b

needs of the Advisory Board. The current NIWG will remain a permanent working group to support the general working level tasks for the NBIC activities of the Advisory Board. Moving forward, the Board and working group functions may evolve to meet the needs of the NBIS partners.

Initiated in FY13 and finalized in FY14, the Advisory Board will oversee the formulation of a communication plan to better engage SLTT and international stakeholders through associations and professional organizations representing the domains monitored by the NBIC. Stakeholder engagement will also be coordinated with the designated sector-specific agency for any engagement with SLTT entities or the private sector. These stakeholders will provide critical feedback and identify needs and gaps to the NBIC and Advisory Board on issues related to biosurveillance policies and practices. As appropriate, the NBIS partners who have authorized and established relationships will leverage subject matter experts across the biosphere to address operational and information sharing aspects related to special interest topics or events.

Activity 1.1.2: Operations Development Team

The Operations Development Team will support the maturation and strengthening of NBIC operations through analysis, research, and outreach to meet stakeholders' expectations. Operations Development is not research and development but the interface with biosurveillance innovation opportunities. Operations Development will interact in three domains: federal/state programs, public/private sector programs, and broader science interface. The team will be responsible for engagement with the various public and private sector programs, specifically for executing the incorporation of new capabilities into NBIC, including those identified during various pilot programs. Moreover, OHA will establish a Science Advisory Group to inform the Operations Development Team integration effort. This group will consist of members from the OHA medical staff, DHS Science and Technology (S&T), National Biosurveillance Advisory Subcommittee, the White House Office of Science and Technology's Biosurveillance S&T Working Group, and NIWG recommended representatives. As appropriate, other entities, such as the Institute of Medicine, could be invited to participate.

The NBIC, supported by the Operational Development Team, will organize, based on the recommendations from the Advisory Board, an annual Industry Day/Stakeholder Workshop in FY13. The goal of the Industry Day/Stakeholder Workshop will be to bring together experts and stakeholders across the federal government and private sector to discuss critical issues surrounding national biosurveillance integration, best practices used in public and private entities, and new technologies to inform technology and information management strategies to address those issues to enhance efficiency and effectiveness of the NBIC. This will provide a unique opportunity for industry representatives to showcase their capabilities and ensure NBIS partners are apprised of innovative technologies that can enhance the integrated biosurveillance system and the products and activities of the NBIC.

In addition to the Industry Day/Stakeholder Workshop, the Operational Development Team will be dedicated to working with NBIS partners to identify operational development

objectives and maintain involvement throughout the requirements generating process to ensure capabilities are developed based on user needs. This group will be informed by the NBIC Advisory Board.

Activity 1.1.3: Establish a lessons learned registry of major national biosurveillance efforts.

The NBIC will maintain a lessons learned library of after action reports that follow major national biosurveillance events. The types of after action reports will be based on recommendations of NBIS partners. Reports will normally be recommended by NBIS partners for such events as NBIS Protocol activations or efforts made by NBIS partners following major events (e.g. 2010 Deepwater Horizon oil spill, 2011 Japanese earthquake and tsunami, 2011 Clenbuterol in China, 2011 *E. coli* in Europe). The NBIC will collect after action reports that are authored by either the NBIC or NBIS partners.

Strategic Objective 1.2

Continue to evolve and complete the NBIC CONOPS with the NBIS partners following completion of the NBIC Strategic Plan.

Activity 1.2.1: Clarify Roles and Responsibilities among the NBIS partners

Because of differing perceptions of roles and responsibilities among the NBIS partners and the SLTT, international and private sector stakeholders, it is essential to work together to further delineate and agree on respective roles and responsibilities. Agreement on the respective roles and responsibilities will be accomplished in FY13.

This strategy is part of the OHA effort to define the NBIC's future strategic direction. Just as a strategic plan is necessary to affect NBIC's mission as mandated by Congress, so is a CONOPS necessary to define how the NBIC works daily within DHS and with its NBIS partners. In FY13 - 14, the NBIC will establish a working group and develop, in collaboration with its NBIS partners, a CONOPS that defines specific formal processes through which the NBIC executes its mission and interacts with partners. This process will be informed by the NBIC Advisory Board and its working groups, as well as the emerging strategy that will be formed at the national level through the NSS. Specifically, the CONOPS interagency working group and subsequently developed document will address the following items:

- engagement with various partners and stakeholders (e.g., DHS Sec, NSS, NBIS partners, NOC, etc.);
- products required by various partners and stakeholders and the appropriate timing of sharing data/information;
- aggregation, integration, and analysis of biosurveillance information prior to a biological incident and in the early stages of characterizing a biological incident pre-

activation of resources and capabilities as outlined in the NRF and during a biological incident when NRF mechanisms are activated;

- process for external entities sharing of information with NBIC (via conference calls, reporting, situation reports, etc) post activation of NRF mechanisms;
- identify NBIC's role in response/recovery operations or supporting the NOC once a biological incident is known;
- ensuring NBIC protocols for biological incidents are consistent, to the extent possible, with protocols for other incidents involving other hazards;
- integration of NBIC indications and warnings and alert and notification protocols through the NOC are fully integrated into their normal and bio reporting systems/procedures;
- codification of NBIC's existing integrated process for indications and warnings and alert and notification protocols with FEMA procedures for alert and notification;
- determining the appropriate synchronization and integration of various interagency biological protocols.

Strategic Objective 1.3

Provide the infrastructure for integration, including information technology systems and space, and support for personnel from NBIS partners with sufficient expertise to enable analysis and interpretation of information.

Activity 1.3.1: Liaison Officer Infrastructure Support

The NBIC currently has one on-site liaison officer (LNO) from the USDA FSIS and is in final discussions about bringing in another LNO from the Department of Veterans Affairs in 2012. NBIC provides the work space, information technology support, and access to both classified and unclassified systems. The NBIC will continue to support current and future LNOs with the appropriate infrastructure to ensure adequate interagency collaboration whether their presence is physical or virtual, part-time or full-time.

Strategic Objective 1.4

Provide technical assistance, as appropriate, to all federal, state, local, and tribal government entities and private sector entities that contribute information relevant to the operation of the NBIC.

Activity 1.4.1: Technical Assistance to Biosurveillance Sectors

Public Law 110-53 directs the NBIC to provide technical assistance to the various sectors where the NBIC conducts biosurveillance. Below are examples of such technical assistance. While the NBIC is charged to disseminate alerts and other information to SLTT governments, it fully coordinates this information sharing with and through federal departments and agencies when working with SLTT stakeholders. Existing relationships between federal partners and SLTT stakeholders provide communications channels within

the NBIS; the following information integration and sharing efforts are meant to enhance and leverage existing federal–state relationships and not to create redundant channels.

BCON RSS Feeds. Tailored Really Simple Syndication (RSS) feeds to NBIS partners based on user-specified keywords, topics, and taxonomies within BCON will target the right information to the right organizations. As an example, NBIC is providing RSS feeds containing BCON data to the National Collaborative for Bio-Preparedness (NCB-Prepared), an important pilot project in North Carolina evaluating the use of new data sources, analytic approaches, and mechanisms for collaboration for biosurveillance. The RSS feeds include open source biosurveillance data from North Carolina and its four neighboring states that they do not already have readily compiled and organized. This activity is developing a methodology whereby states can have access to BCON RSS feeds. The goal is to be able to provide these feeds to all 50 states and four territories by the end of FY14.

BCON-X. BCON-X is the transition of the BCON tool to the DHS Cloud environment. This will manage costs and provide scalable capabilities and capacity as have been previously described. In addition, this additional functionality will provide external stakeholders with greater access to the BCON tool, which the NBIS member agencies have requested. This effort is dependent on the outcome of the BCON assessment currently underway but is poised to occur in FY13/14.

Engagement through Minerva.

A. State and local. The NBIC will deploy the SLTT BCOP, called "Minerva", to all 50 states. The NBIC launched a pilot program to four states, Minnesota, New Jersey, North Carolina, and Washington, in late 2010 to provide state and local governments with a BCOP accessible through a HSIN portal. As of April 2012, 50 states and the District of Columbia have access to this system.

In FY13, NBIC will seek funding to provide for the required specialized technical support to integrate the growing state outreach with Minerva BCOP.

B. Territorial and tribal. In FY13, OHA seeks to expand and complete Minerva deployment to territorial and tribal entities.

International Engagement.

NBIC will partner with the Department of State to develop a CONOPS for sharing information with Canadian and Mexican authorities through FY13. These activities will greatly expand NBIC's situational awareness with international stakeholders whose proximity to the United States could provide early warning of events.

A. Canada. In FY12, the NBIC will initiate increased information sharing with Canada. Their advanced market economy and shared interests with the United States offer a natural open space for mutual biosurveillance information sharing.

B. Mexico. Through OHA, the NBIC will initiate contact with Mexican government health authorities. As one of the only two nations contiguous to the United States, many nationals from each country cross the U.S.-Mexico border routinely creating a means of rapid disease transmission. Sharing of biosurveillance information would be mutually beneficial to the two countries.

OHA will seek to leverage existing federal government efforts taken under the Beyond the Borders initiative and the North American Plan for Animal and Pandemic Influenza.

STRATEGIC GOAL 2:

Enhance federal government ability to rapidly identify, characterize, localize, and track a biological event of national concern by integrating and analyzing information relating to human health, animal, plant, food, and environmental monitoring systems (both national and international).

Integration and analysis of shared information allows NBIC to build the baseline understanding and general situational awareness. This steady-state, baseline surveillance is critical to allow recognition of the occurrence of a biological event and also when it crosses a threshold in becoming a biological event of national concern. The integration and analysis of information also supports forecasting potential impacts to assist with informing mitigation efforts. The core disciplines of information integration and sharing and analysis will be accomplished through the following objectives and activities.

Strategic Objective 2.1

Consolidate information from relevant and available surveillance systems maintained by NBIS partners to detect biological events of national concern across human, animal, and plant species.

Activity 2.1.1: DHS Data Integration

One of the unique aspects of DHS compared to other agencies with a role in biosurveillance is its large and highly-distributed operational workforce. Recognizing that many of these operational personnel are located in areas of interest for biosurveillance (ports, borders, and airports, among others), DHS operational Components present a largely untapped potential resource for early warning. Accordingly, the Office of Management and Budget recommended that OHA and the broader DHS review internal DHS Component data sources that would be beneficial for inclusion into NBIC data sharing pilots.

In response to this request, OHA has conducted a Departmental data call in collaboration with the DHS Office of the Chief Information Officer (OCIO) to identify information sources that capture or could support biosurveillance. These efforts will increase the information sharing landscape of NBIC and establish improved information access to relevant, authoritative, and trusted data within DHS. Providing access to secure DHS data that can be

trusted will improve the data quality and confidence level of NBIS information. NBIC expects to initiate potential data migration/integration agreements with DHS Components in FY12 and to have integrated one or more DHS biosurveillance data systems by the end of FY13. The meta-data regarding biosurveillance systems, programs, and tools defined by the CDC-led Federal Biosurveillance Working Group will be collected as part of this integration process as needed for a federal cross-agency registry effort.

Activity 2.1.2: Scenario-based Pilot Programs

In FY12 – FY13, NBIC will engage with its initial set of pilot projects to test and evaluate common information sharing processes and platforms and diverse analytic approaches to determine the best information-sharing structure that is needed for NBIC going forward. Although the exact scope and nature of the individual projects remain in the planning and development stage, it is envisioned that several fast-track initiatives will be conducted with those parties already working closely with the NBIS partners. These initiatives will focus on making unique contributions to the NBIS by advancing the collective knowledge in various unexplored topic areas. It will be designed to develop and validate new tools that fill current gaps while avoiding duplication of NBIS partner activities.

The NBIS partners are currently reviewing the proposed scenario-based pilot projects and are encouraged to provide additional suggestions for pilots in order to identify areas of greatest significance to the NBIS partners. NBIC has proposed pilots across the broad sectors of food, agricultural, and human health/emerging disease surveillance.

Several basic principles will drive the development and evaluation of these pilots:

- Leverage current existing assets for an efficient, scalable, useable, and cost effective structure;
- Apply new and existing successful analytic structures and tools for integration and user adoption;
- Create an open, supported, information-sharing, and problem solving environment to promote partner experimentation and collaboration;
- Define measures and benchmarks for success and design a strategy to incorporate measurable integrated information sharing criteria;
- Examine and clarify underlying assumptions for successful integration parameters and components; and
- Measure and validate results after a defined period to determine success for a larger implementation of the process, tool, or policy.

The criteria for selecting the pilot programs relate to the core disciplines of NBIC but focus on how the program could benefit the larger NBIS community:

Collaboration

- Does the NBIS partner(s) consider it “their pilot”?
- Does this pilot bring in a new partner?

- Were the metrics jointly defined?
- Is the partner part of the evaluation process?

Information Sharing and Integration
- Does this bring together three or more information sets?
- Will this information provide added value to the NOC and support informed decision making?

Analysis
- Can the tool be leveraged beyond the purpose of the individual pilot?

User-Defined Reporting
- Can reports be tailored to different end-user groups?

Activity 2.1.3: Information Sharing Agreements (ISAs).

NBIC will develop an Information Sharing Agreement in collaboration with the NBIS agencies. The USDA FSIS began negotiating an ISA with NBIC in FY12. The objective is to complete this series of agreements by the end of FY14.

Strategic Objective 2.2
Seek state and local biosurveillance information as well as private sources of surveillance information both foreign and domestic, when such sources would enhance coverage of critical surveillance gaps.

Activity 2.2.1: Function-based Pilot Program: National Collaborative for Bio-Preparedness (NCB-Prepared)

The NCB-Prepared is a public-private partnership to develop, test, and implement an advanced biosurveillance system beginning in North Carolina. It is a collaborative effort of academic, government, and industry leaders focused on developing a local, bottom-up approach to public health and emergency medical responsiveness and awareness. The NCB-Prepared is creating a comprehensive statewide biosurveillance system for analyzing data from a variety of health, food, social, environmental, and animal sources to provide early outbreak detection and situational awareness of health events. The strategy calls for the continued use of this program as one of its function-based pilot programs for not only state/local engagement but also for private sector engagement, with the goal of evaluating approaches and data sources for scalability to the national level.

This system is innovative in three ways: 1) it gathers and analyzes early biological event information that other current surveillance systems do not use, such as Emergency Medical Services and Poison Control Center data, 2) applies advanced analytics to that data, eventually to include predictive forecasting and optimization, improving the knowledge that can be derived from available data, and 3) develops new approaches to collaboration with state and local entities and data owners

In FY11, NCB-Prepared achieved their overarching objective to build a proof of concept for the state of North Carolina using a scalable cloud-computing platform that provides access to data and data visualization using a rules-based technology to support data quality and security. The project created new data discovery and integration methodologies that helped address long-standing challenges in the quality and completeness of data records and yielded improved sensitivity and specificity of existing analytical tools for health threat detection. These discoveries and methodologies will be evaluated for operational adoption by NBIC and incorporated as appropriate to improve the NBIC.

In FY12 and FY 13, NCB-Prepared will develop an operational system that canvases three states, including North Carolina, South Carolina and West Virginia, to provide alerts and warnings at the state level but scalable to provide a national biosurveillance picture. This regional collaboration will link directly to NBIC to improve information sharing with state and local stakeholders. It will provide NBIC a better understanding for the utility of state information and the value NBIC can provide to the states.

In FY13, NCB-Prepared will continue to incorporate additional states into its states and national biosurveillance data sets for the trusted third party network. NCB-Prepared will further its network and establish a means for sustainability outside of the federal government. Should metrics for success be met by FY14, NCB-Prepared data and analysis will be regularly shared and operationally integrated into NBIC.

Activity 2.2.2: NBIC Ingest Information Technology Tools

In FY12, NBIC is assessing potential IT capabilities to enhance current operations of the NBIS. Several pilot projects touch on "information sharing and integration" and "collaboration", however, most of these pilots remain in the requirements definition phase. As part of the assessment, NBIC has released a request for information (RFI) to industry to identify potential capabilities. NBIC is in the process of reviewing the industry white papers that were submitted to determine any possible further action in FY13.

Activity 2.2.3.: Function-based Pilot Program: Social Media

Social networking is an open, inclusive bridge encouraging the exchange of real time information around the world that is routinely postulated as having biosurveillance value. The capability has undergone small scale investigations in academia, but has not been thoroughly tested in a national operations environment. Thus, one of the pilot programs that OHA will explore from FY12 through the end of FY13 is to scientifically evaluate the value of social media in biosurveillance. This pilot's goals are to determine the early warning and event characterization value of social media. The program will test and evaluate specific analytical tools and compare performance to known social media analysis providers such as Google Flu.

OHA will examine if social media can augment existing biosurveillance detection and analysis capabilities of the government through either earlier advance warning or better characterization of an ongoing event. This effort will examine initiatives undertaken by other

NBIS partners and leverage them where possible.

Activity 2.2.4.: Private Sector Absenteeism

Private companies with a large number of employees are potential early indicators of biological events. Their sampling size when spread over large parts of the United States could serve as a barometer pointing to early detection of biological events of national concern. Normally, unstructured data on sickness is gathered in a structured form when these large companies analyze their absenteeism rates. A number of biosurveillance systems are available or under development, including information regarding emergency service use, consumer complaints, over-the-counter medication sales, employee absenteeism, and use of social media.

In FY13 through FY14, the NBIC will explore how it can partner with private industry to test the trigger mechanism that a large representative group of employees provides. Absenteeism trends could reinforce biosurveillance goals of ever earlier detection and increased situational awareness to reduce the intensity and duration of a biological event. In conjunction with DHS Infrastructure Protection's Protected Critical Infrastructure Information program, the NBIC will partner with the private sector in this promising initiative.

In addition, in FY12 through FY13, NBIC will continue work with DHS Chief Human Capital Officer to regularly receive de-identified DHS absenteeism data. As a large employer with over 250,000 employees, trend data from DHS may provide a sample size large enough provide surveillance benefits and to encourage NBIS partners to analyze similar data within their own departments and agencies.

Strategic Objective 2.3
Incorporate information technology systems that use the best available statistical and other analytical tools to identify, characterize, localize, and track biological events of national concern in as close to real time as is feasible.

Activity 2.3.1: FDA Food Safety Modernization Act Implementation

The Food Safety Modernization Act states, "The [HHS] Secretary, acting through the Director of the Centers for Disease Control and Prevention [CDC], shall enhance foodborne illness surveillance systems to improve the collection, analysis, reporting, and usefulness of data on foodborne illnesses". The list of ways this mandate should be met includes "integrating foodborne illness surveillance systems and data with other biosurveillance and public health situational awareness capabilities at the federal, state, and local levels, including by sharing foodborne illness surveillance data with the National Biosurveillance Integration Center.[26]"

1) The legislation specifically uses the word "data" versus "information," suggesting the intent is to move beyond summary reports and a possible need for a robust

[26] Public Law 111-353, section 205(b)(1)

information technology sharing interface. This requires a long-term OHA commitment to data integration with our partners.

2) At this time, HHS/CDC and NBIC are exploring how to implement the legislation consistent with the CDC and NBIC information sharing focus.

Activity 2.3.2 Current Information Technology-based Biosurveillance Capabilities

The BCON and the BCOP are the two primary Information Technology tools used by the NBIC analysts to perform daily biosurveillance.

BCON initiatives include:

- In FY12, NBIC has awarded a contract to externally review the utility of BCON. Within five months of award, a decision will be presented to the NBIC for continued use of the BCON system as-is, a transition plan for a replacement ingest tool, or migration of BCON management to another organization such as DHS OCIO.

BCOP initiatives include:

- Expansion of the BCOP user interface fixes: back navigation, single log-in, and certificates.
- Working with other OHA partners, BioWatch and the Health Security Intelligence Enterprise, to have their portals route users directly to BCOP.
- Leverage the input from the Association of State and Territorial Health Officials to provide feedback and updated requirements on the advancement of the BCOP system.
- Investigate other potential future hosts for the BCOP to include the NOC COP

These enhancements are in response to customer inputs and will take place during FY12 and FY13. The NBIC will continue to work within NBIS partner current IT capabilities and seek opportunities to leverage information sharing with them.

Activity 2.3.3: National Poison Data System.

The NBIC will work to include the Association of American Poison Control Center (AAPCC) personnel and information in the NBIS analysis process. While CDC currently collaborates with the AAPCC, poison control data has not previously been fully operationalized. NBIC and CDC will collaborate to enhance operationalization, sharing AAPCC-generated alerts with the interagency. NBIC will use real time AAPCC data to share information on known or suspected biological agent, toxin, and chemical exposures and effects.

STRATEGIC GOAL 3

Enhance federal government ability to disseminate alerts and other information to NBIS partner agencies and to agencies of state, local, and tribal governments.

Congress charges the NBIC to disseminate biosurveillance information. The NBIC enhances shared situational awareness and provides decision making support through user-defined reporting. This reporting is shaped by stakeholders and built from the collaboration, information integration, and analysis from across the NBIS partners. As a core discipline, effective information dissemination to the appropriate people in the appropriate user-defined format is critical in accomplishing this goal.

Strategic Objective 3.1
Strengthen and mature the method of real time communication with the NOC and provide 24 hour support to the NOC.

Activity 3.1.1: DHS National Operations Center Common Operating Picture

In FY12, NBIC and OCIO are working to nest biosurveillance information within the NOC COP so that this information is available to the federal interagency as well as SLTT entities. NBIC and OCIO are defining the requirements through participation on the NOC COP integrated product team. Concurrently migrating DHS biosurveillance data/information from operational components to the NOC COP will provide more defined roles and responsibilities between the NOC and NBIC. This effort will enhance the ability to conduct NBIC Protocol Activations and clarify the relationship between NBIC and the NOC to NBIS member agencies.

As a first step, in order to clarify the distinct roles of OHA as a member of the NBIS and OHA as a representative of the Department's Chief Medical Officer, there will be two representatives to the NOC CAT to properly fill the duties to each organization. An NBIS representative will be nominated by the NBIC to serve on the CAT specifically for coordinating NOC requirements with executing the biosurveillance mission. NBIC will continue to monitor event tempo among the NBIS partners and communicate regularly through the CAT.

Activity 3.1.2 FEMA Emergency Notification System

The NBIC implemented use of the FEMA Emergency Notification System for NBIS Protocol activations during FY12. This upgrade allows for notification of a scheduled teleconference to all participants within several minutes via phone and email.

Strategic Objective 3.2
Implement information sharing in consultation with the Office of the Director of National Intelligence, DHS Under Secretary for Intelligence & Analysis (I&A), and other U.S. government entities, as appropriate.

Activity 3.2.1: Security Clearances and Facility Clearances

From FY12 through the end of FY13, as part of a wider workforce analysis, OHA will evaluate the proportion of NBIC staff with high-level top secret/sensitive compartmented information clearances and sensitive compartmented information facility access to ensure

that the NBIC effectively meets the requirements in P.L. 110-53 regarding coordination with the NOC and the broader intelligence community.

Activity 3.2.2: Intelligence Community Outreach Strategy

P.L. 110-53 directs that the NBIC conduct notifications, assessments, and information sharing "in consultation with the Director of National Intelligence, the Under Secretary for Intelligence and Analysis, and other offices or agencies of the federal government, as appropriate." NBIC continues to improve its coordination with the broader intelligence community to include coordination with the National Center for Medical Intelligence, to whom OHA has assigned a liaison.

NBIC needs to combine the access of appropriate security clearances for its analysts with the benefit that comes from being physically co-located with an intelligence agency. The Congressional charge to implement information sharing in consultation with the Office of the Director of National Intelligence can be accomplished by leveraging the Department's resident intelligence Component.

- In FY12, NBIC will establish a formal relationship with DHS I&A to receive, be informed of, and analyze classified products. Leveraging the existing relationship between OHA's State and Local Initiatives office and DHS I&A, OHA will draft a memorandum of understanding (MOU) between OHA and I&A for sharing of classified biosurveillance products.

STRATEGIC GOAL 4

Mature and Strengthen NBIC into a World-class Biosurveillance Analysis and Integration Organization.

This strategic plan forms the first framework for a review of the alignment of NBIC resources with core mission activities as expressed in the strategic goals and objectives. Strategic planning will help enhance the NBIC's collaboration, information sharing and integration, analysis, and user-defined reporting capabilities. The NBIC's initial development over the past four years with the collaborative effort of NBIS partners and the broader biosurveillance community over the past year inform this strategic plan and the resource requirements.

The NBIC will produce an annual update to the five-year plan in the fall of each year to accompany its budget submission. This is an emerging strategy that requires periodic review, in which NBIS partners will be invited to participate.

Strategic Objective 4.1

Recruit, develop, and retain a collaborative, talented, multi-disciplinary analytic staff with the necessary expertise to develop and operate the NBIC.

Activity 4.1.1: Recruit, Develop, and Retain a Cadre of DHS Biosurveillance Professionals to Operate the NBIC.

Public Law 110-53 states: "The Directing Officer of the NBIC shall hire individuals with the necessary expertise to develop and operate the NBIC" and directs the NBIC to evaluate the analytical capability of NBIC on an ongoing basis. Successful analysis of large, disparate sources of data and information to produce early warning and shared situational awareness regarding biological events requires a diverse, multidisciplinary staff trained to produce and integrate relevant and timely analysis for decision makers. As the budget and staffing allows, NBIC will recruit and retain a highly skilled staff through processes which include but are not limited to standard hiring processes, the Public Health Service, and fellowship programs such as the Presidential Management Fellows.

Though NBIC analysts have gained immeasurable institutional knowledge and refined their analytical capabilities of biosurveillance information during their tenure, this 2007 assessment requires revision. In order to address the expertise needed for the entirety of the biosphere, biosurveillance integration and operations, the NBIC must have the right number of the right kinds of analysts to include all necessary areas of expertise.

Strategic Objective 4.2

To augment the expertise of NBIC biosurveillance professionals in Strategic Objective 4.1, recruit technical expertise in human, animal, plant, food, and environmental information analysis and interpretation through interagency agreements and other vehicles.

Biosurveillance integration occurs within the analysis and production section of the NBIC. The NBIC's subject matter experts work with NBIS liaison officers who reach back using the vast analytic capability of their departments. Robust collaboration across the federal, SLTT, and private domains occurs at the intersection where NBIC analysts, NBIS Liaison Officers, real time communications with the NOC, and robust collaboration with DHS I&A and broader intelligence communities converge.

Activity 4.2.1: Member Agency Memorandum of Understanding

NBIC seeks to complete MOUs with all NBIS partners by the end of FY13. The level of NBIS participation of partners varies depending on whether a partner is a net consumer or producer of biosurveillance information. Likewise, each MOU reflect the diverse capabilities and levels of biosurveillance effort of the NBIS partners.

Activity 4.2.2: NBIC Interagency Agreements (IAAs)

Congress directs Member Agencies to "provide personnel to the NBIC under an interagency personnel agreement and consider the qualifications of such personnel necessary to provide human, animal, and environmental data analysis and interpretation support to the NBIC". The NBIC is authorized to reimburse any department or agency providing personnel and will continue to seek liaison officer representation from all federal NBIS partners. Not all NBIS

partners perform biosurveillance at the same scope, or in the same way. Therefore, the need for an IAA will vary as well as the level of participation under IAAs.

The NBIC leverages LNOs who enhance collaboration and integration with NBIS partners. The LNO presence is defined by each partner. Placement can vary from full-time presence at the NBIC to part-time or virtual. Virtual LNOs could provide regular agency points of contact while maintaining presence at the LNO's home agency. On site, the NBIC has one LNO from USDA FSIS and has continued to increase federal agency engagement through OHA liaison officer positions. The CDC has provided an LNO to OHA since the start of FY12. In addition, DHS S&T has provided an LNO to the Armed Forces Health Surveillance Center since the start of FY12. The NBIC has been able to leverage this position to increase its engagement with the Department of Defense. Furthermore, OHA has been providing an LNO to the National Center for Medical Intelligence since the start of FY12. An LNO from the Department of Veteran Affairs is expected to join the NBIC in 2012.

- Given the nature of NBIC's mission, Public Health Service officers are anticipated to be an essential component of the NBIC team, providing expertise in medicine and public health.
- In FY12, the NBIC will seek an LNO from the National Wildlife Health Center (NWHC). The NWHC is part of the U.S. Geological Survey within the Department of the Interior. The mission of the NWHC is to provide information, technical assistance, and research associated with global wildlife health issues. Among other activities, the NWHC is engaged in monitoring and assessing the impact of disease on wildlife, as well as defining ecological relationships affecting disease occurrence. The NBIC will seek to have an on-site LNO in place in FY13.

Strategic Objective 4.3
Support the growth and development of a cadre of DHS biosurveillance professionals through training opportunities.

Activity 4.3.1: Biosurveillance Workforce of the Future

This objective draws directly from the National Biosurveillance Strategy for Human Health priority area of the biosurveillance workforce of the future. One of the challenges in developing this workforce is getting access to specialists. "Professionals performing biosurveillance need access to specialists such as statisticians, epidemiologic and mathematical modelers, information and decision scientists, informaticians, natural language processing experts, analytic data management programmers, knowledge managers, and disease and GIS mapping experts."[27] The NBIC will seek continuing professional development opportunities for its analysts and other biosurveillance professionals in the broader community beginning in FY13.

[27] U.S. Department of Health and Human Services. *National Biosurveillance Strategy for Human Health.* February 2010.

Activity 4.3.2: Operations-to-Operations Exchange

The NBIC will provide professional development opportunities to its analysts to advance awareness of and cooperation within the interagency biosurveillance community. The analysts will be detailed to federal NBIS partner agencies and other organizations for up to two-week exchanges biannually. The agency targeted will reflect the subject matter expertise of each analyst. This will permit the NBIC's analysts to better understand the mission of NBIS partners, learn the processes and challenges of these agencies, and to develop professional contacts to enhance future collaboration. Other exchanges could include laboratories or Centers of Excellence. Continuing exchanges outside staff areas of expertise will continue to provide broadening of biosurveillance experience.

C. CONCLUSION

Effective management of risks from biological threats and hazards depends on early warning and shared situational awareness, so that risk management decisions surrounding response and recovery are well-informed. To that end, the federal government performs biosurveillance through several domains: human, animal, plant, food, and environmental health. The federal government has the duty to ensure that information from across these domains is analyzed, shared, and used in ways that save lives, ensure civil order and preserve government, mitigate socioeconomic impacts, and reduce the likelihood of reoccurring events. Within that duty, the NBIC has a key responsibility to integrate the nation's biosurveillance information. Every day the NBIC reaches back through federal partners and SLTT stakeholders as well as the private sector to enhance the federal government's capability to integrate and share biosurveillance information in support of decision makers. There is still much to be learned from combining these different information sources.

This Strategic Plan groups the NBIC biosurveillance effort into four core disciplines which include: 1) Collaboration, in which governance improvements and new communication processes and policies will be pursued; 2) Information integration and sharing, in which appropriate IT systems, business rules, and partner data management/ownership verification will be a priority, 3) Analysis, which requires multidisciplinary, cross-cutting, and in-depth analytic support to provide timely and relevant information to support decisions; and 4) User-defined reporting, recognizing that all aspects of the NBIC's analysis and products must be tailored and customer-focused.

Having a strong, state-of-the-art NBIC will support these efforts on behalf of the community, and this Strategic Plan articulates clear strategic goals, objectives, and activities essential to achieving its mission. Through the NBIC, and working together with our partners and stakeholders, we will advance the safety, security, and resilience of the nation through leadership in biosurveillance integration.

1

ANNEX A: AUTHORITIES

1. Implementing Recommendations of the 9/11 Commission Act of 2007, Public Law 110-53, 121 Stat .266 (2007), codified in part at 6 USC §195b, "National Biosurveillance Integration Center"
2. FDA Food Safety Modernization Act of 2011, Public Law 111-353, 124 Stat. 388, sec. 205, codified in 21 U.S.C. 2224 (2011).
3. Homeland Security Presidential Directive 9 – Establishes a national policy to defend the agriculture and food system against terrorist attacks, major disasters, and other emergencies.
4. Homeland Security Presidential Directive 10 – Provides a comprehensive framework for our nation's biodefense.
5. Homeland Security Presidential Directive 21 – Establishes a national strategy that will enable a level of public health and medical preparedness sufficient to address a range of possible disasters.

ANNEX B: ACRONYMS

AAPCC	Association of American Poison Control Center
BCON	Biosurveillance Common Operating Network
BCOP	Biosurveillance Common Operating Picture
BIWAC	Biological Indicators and Warnings Advisory Committee
CAT	Crisis Action Team
CDC	Centers for Disease Control and Prevention
CIR	Critical Information Requirements
CONOPS	Concept of Operations
COP	Common Operating Picture
DHS	Department of Homeland Security
FAVD	Food, Agriculture, and Veterinary Defense
FDA	Food and Drug Administration
FSIS	Food Safety and Inspection Service
GAO	Government Accountability Office
HHS	Health and Human Services
HSIN	Homeland Security Information Network
HSPD	Homeland Security Presidential Directives
I&A	Intelligence and Analysis
IAA	Interagency Agreement
IHR	International Health Regulations
ISA	Information Sharing Agreements
IT	Information Technology
LNO	Liaison Officer
MOU	Memorandum of Understanding
NBIC	National Biosurveillance Integration Center
NBIS	National Biosurveillance Integration System
NCB-Prepared	National Collaborative for Bio-Preparedness
NCFPD	National Center for Food Protection and Defense Center of Excellence
NIOC	NBIS Interagency Oversight Council
NIWG	NBIS Interagency Working Group
NOC	National Operations Center
NSS	National Security Staff
NWHC	National Wildlife Health Center
OCIO	Office of the Chief Information Officer
OHA	Office of Health Affairs
PHEIC	Public Health Emergency of International Concern
PPD	Presidential Policy Directive
RFI	Requests for Information

RSS	Really Simple Syndication
SLTT	State, local, territorial, tribal
SME	Subject Matter Expert
USDA	U.S. Department of Agriculture
WHO	World Health Organization

ANNEX C: PHOTO CREDITS

1. Title Page: Photo of cow provided by Dr. Pam Hullinger, University of California Davis/Lawrence Livermore National Laboratory.


U.S. DEPARTMENT OF
HOMELAND SECURITY