



November 2023

BIODEFENSE

National Biosurveillance Integration Center Has Taken Steps to Address Challenges, but Could Better Assess Results

Accessible Version

GAO Highlights

Highlights of [GAO-24-106142](#), a report to congressional requesters

Why GAO Did This Study

Biosurveillance is the process of gathering, interpreting, and communicating information to provide early warning and situational awareness about biological events. The COVID-19 pandemic demonstrated that biological events can cause massive health, social, and economic disruption. It also underscored the importance of developing and maintaining a national biosurveillance capability.

Statute directs NBIC to consolidate information from human health, animal, plant, food, and environmental monitoring systems across the federal government to improve the likelihood of identifying a biological event at an early stage.

GAO was asked to evaluate NBIC program activities. This report discusses (1) how NBIC collects and integrates biosurveillance data, addresses related challenges, and assesses its performance; (2) the extent to which NBIC evaluates its products and obtains feedback from stakeholders; and (3) NBIC's role during the COVID-19 pandemic. To conduct this work, GAO reviewed NBIC products and related agency documentation, interviewed NBIC officials and a selection of stakeholders from 12 federal agencies and two national associations, and analyzed NBIC's strategic planning documents.

What GAO Recommends

GAO is recommending that DHS ensure that NBIC develops future strategic planning documents with clearly defined performance measures and associated time frames. DHS concurred with this recommendation.

View [GAO-24-106142](#). For more information, contact Chris Currie at (404) 679-1875 or CurrieC@gao.gov.

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What GAO Found

The National Biosurveillance Integration Center (NBIC), within the Department of Homeland Security (DHS), identifies, tracks, and characterizes biological events using open-source, federal, and private sector data sources. NBIC integrates these data to develop written products and support its information sharing and coordination activities.

National Biosurveillance Integration Center (NBIC) Product Development and Distribution Process, as of October 2023:

Data collection	Product development	Product distribution
NBIC analysts collect biosurveillance information from global open-source data and federal partners, among other sources	NBIC develops analytical biosurveillance products in collaboration with its partners	NBIC distributes its products to federal, state and local, congressional, private sector, and international stakeholders through its email distribution lists and government websites

Source: GAO analysis of NBIC information. | GAO-24-106142

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Source: GAO analysis of NBIC information. | GAO-24-106142

In addition, in recent years, NBIC began taking steps to address challenges in accessing needed data, obtaining adequate personnel, and developing new technologies. NBIC's efforts were guided by two strategic planning documents. But these documents did not have clearly defined performance measures and time frames for accomplishing milestones. For example, one milestone is to strengthen relationships with relevant DHS components but no additional details were included. By developing clearly defined performance measures, NBIC could better assess program results and share this information with DHS management and federal stakeholders.

NBIC evaluates the quality and reach of its products and the federal stakeholders GAO interviewed reported generally favorable views of its written products. The stakeholders included those that were familiar with NBIC's principal written products or who had participated in NBIC's coordination and information sharing activities. Officials from 11 of 12 federal agencies and two national public health

associations told GAO that they use NBIC products, along with other sources, to help inform their situational awareness of global biological events.

NBIC incorporated COVID-19 related information into its existing products and conducted some original analyses to support DHS management throughout the pandemic. These analyses included monitoring cross border health trends and global flight patterns. According to NBIC officials, they have produced thousands of COVID-related products since January 2020. Several of NBIC's federal stakeholders told GAO that NBIC's products were particularly helpful during the early stages of the pandemic when information about the disease was limited.

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Abbreviations

CDC	Centers for Disease Control and Prevention
CWMD	Countering Weapons of Mass Destruction Office
DOD	Department of Defense
DHS	Department of Homeland Security
HHS	Health and Human Services
HPAI	highly pathogenic avian influenza
NBIC	National Biosurveillance Integration Center
NBIS	National Biosurveillance Integration System
SLTT	State, local, tribal, and territorial governments
VA	Department of Veterans Affairs
WHISPers	Wildlife Health Information Sharing Partnership – event reporting system

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November 29, 2023

The Honorable Gary C. Peters
Chairman
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Anthony P. D’Esposito
Chairman
Subcommittee on Emergency Management and Technology
Committee on Homeland Security
House of Representatives

The Honorable Kat Cammack
House of Representatives

As the COVID-19 pandemic illustrated, biological incidents that occur across the globe can quickly spread to the U.S. and cause massive health, social, and economic disruption. Developing and maintaining a national biosurveillance capability remains critical to provide early warning and situational awareness, and help inform public health and other types of emergency response. The data needed to detect an emerging infectious disease or bioterrorism threat may come from a variety of sources. As a result, the ability to analyze and share data from multiple sources could help officials better collaborate to recognize the nature of a biological threat or understand its scope.

Many federal departments routinely conduct a range of biosurveillance activities as part of their individual missions. But these efforts are dispersed across the federal government and often focus on individual domains (i.e., human, animal, or plant health). The Implementing Recommendations of the 9/11 Commission Act of 2007 (9/11 Commission Act) created the National Biosurveillance Integration Center (NBIC)—within the Department of Homeland Security (DHS). NBIC’s objective is to integrate and analyze information from health surveillance systems across the federal government and support the interagency biosurveillance community.¹

¹6 U.S.C. § 195b.

To achieve this objective, NBIC collaborates with its interagency federal partners who have missions or resources that support NBIC's activities. The center also develops a range of written analytical products for distribution to a broad range of stakeholders that include federal partners, congressional officials, private sector and international recipients, as well as state, local, tribal, and territorial (SLTT) governments.²

We have previously reported that NBIC faced challenges fulfilling its mission due to a lack of collaboration among its federal partners and obstacles in obtaining the necessary data for achieving its integration roles.³ For example, in 2015, we reported that NBIC faced challenges in obtaining raw data from federal agencies due to statutory and regulatory reasons. In addition, we found that although NBIC wanted to obtain a liaison from each of its partners, few federal agencies provided one.

Given these previously reported challenges and the continued importance of an integrated biosurveillance capability, you asked us to review NBIC's efforts to enhance its data integration efforts and evaluate its products and activities. Specifically, this report examines (1) how NBIC collects and integrates biosurveillance data, addresses related challenges, and assesses its performance; (2) the extent to which NBIC evaluates its products and activities, and the feedback it has received from stakeholders; and (3) NBIC's role during the COVID-19 pandemic.

To address our first objective, we collected and reviewed documentation from NBIC related to its data collection and analysis activities. In particular, we collected information on analyst roles and responsibilities, biosurveillance information sources and data systems, NBIC's analytical products and the criteria used to determine which biological events will be reported, and interagency information sharing and collaboration efforts. We reviewed key documents that guide NBIC's activities and products such as the Strategy for Integrated Biosurveillance, issued in 2019, and

²NBIC produces three primary written biosurveillance products for these audiences—Monitoring Lists, Biosurveillance Event Reports, and Spot Reports—which generally identify and characterize significant global biological events.

³GAO, *Biosurveillance: Developing a Collaboration Strategy is Essential to Fostering Interagency Data and Resource Sharing*, [GAO-10-171](#) (Washington, D.C.: Dec. 18, 2009); and GAO, *Biosurveillance: Challenges and Options for the National Biosurveillance Integration Center*, [GAO-15-793](#) (Washington, D.C.: Sept. 24, 2015). The 2009 report included two recommendations for NBIC to develop (1) a strategy for addressing barriers to collaboration; and (2) accountability mechanisms to monitor these efforts. NBIC took actions to address these recommendations and issued a strategic plan in August 2012.

the associated NBIC Implementation Plan for fiscal years 2022-2023.⁴ We assessed these strategic planning documents and NBIC's efforts to assess program performance against program management best practices and Standards for Internal Control in the Federal Government.⁵ In particular, we evaluated NBIC's performance measures using related standards contained in Principle 6: Defining Objectives and Risk Tolerance. We also reviewed other relevant documents, including NBIC's Advisory Board charter and summaries of meetings of the NBIC Advisory Board and Interagency Working Group from March 2022 to May 2023.⁶

To better understand how NBIC integrates biosurveillance information into its products, we reviewed a non-generalizable selection of NBIC's Monitoring List products, which are daily summaries of ongoing acute biological events around the globe. We selected one product per week between September 2022 and March 2023, for a total of 31 products reviewed.⁷ Additionally, we collected data from NBIC regarding the number and type of customers on its product distribution list, as well as the total number of NBIC's emails that federal and SLTT customers opened from 2019-2022.⁸ To assess the reliability of these data, we reviewed supporting documentation and gathered information from interviews and written responses from relevant NBIC officials. We determined that these data were sufficiently reliable for the purposes of providing general context on the scope of NBIC's product distribution. We also conducted interviews with NBIC officials to discuss biosurveillance

⁴Department of Homeland Security, Countering Weapons of Mass Destruction Office, *Strategy for Integrated Biosurveillance, Fiscal Year 2018 Report to Congress*, (Washington D.C.: July 30, 2019); Department of Homeland Security, Countering Weapons of Mass Destruction Office, *Strategy for Integrated Biosurveillance – NBIC Implementation Plan FY 2022 – 2023*, (Washington, D.C.; Mar. 29, 2023).

⁵Project Management Institute, Inc., *The Standard for Program Management, Fourth edition* (2017); and GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C., Sept. 10, 2014).

⁶The Advisory Board serves as a senior-level coordination and communication body for NBIC comprised of 16 federal partners. The NBIC Interagency Working Group exists to provide support and assist the Advisory Board in addressing NBIC operational, programmatic, and scientific issues. The meeting summaries we reviewed represent the most recent documents available since we began our audit in 2022.

⁷We selected the Monitoring List because it is NBIC's most frequently issued product and was widely recognized by officials we interviewed among NBIC's federal partners. This time period corresponds with our primary data collection period for this audit.

⁸We selected this time period, in part, because NBIC implemented additional data back-up procedures in late 2019 and prior historical data on NBIC's product distribution list was not available.

data sources and related access and data sharing challenges, NBIC's federal liaison program, and ongoing technology projects.

To address our second objective, we reviewed documentation related to NBIC's internal quality assurance processes for its primary written products, as well as related performance indicators. We reviewed NBIC's Federal Stakeholder Surveys conducted in 2016 and March 2023. To understand the methods and agency response rate to the survey, we obtained written responses from NBIC to questions we submitted about the survey. While the response rate to the survey was low and the results are not generalizable, we determined that the data were sufficiently reliable for providing general context on the feedback NBIC received, with appropriate caveats about the response rate. We also reviewed interview questions that NBIC has used since August 2022 to solicit feedback from new customers of its products. We conducted interviews with NBIC officials to further discuss efforts taken to obtain product feedback from federal and SLTT customers and identify examples of any related changes incorporated based on customer feedback.

In addition, we conducted semi-structured interviews with officials from a selection of 12 federal departments and agencies to obtain their perspectives on NBIC's products, as well as its data integration and interagency coordination efforts. We selected these 12 federal departments and agencies to include a combination of those that (1) were members of the NBIC Interagency Working Group, (2) had representatives that routinely participated on the daily NBIC interagency teleconference, (3) were knowledgeable about NBIC's principal written products, or (4) had provided federal liaisons to NBIC as of July 2023.⁹ To gather additional perspectives on NBIC's products, activities, and related outreach efforts, we also interviewed representatives from two national organizations that represent SLTT public health agencies and help support public health surveillance and response activities: the Association of State and Territorial Health Officials and the National Association of County and City Health Officials.

⁹Federal departments and agencies/offices that we spoke to included the Departments of Health and Human Services (Centers for Disease Control and Prevention, Administration for Strategic Preparedness and Response, and the Food and Drug Administration); Defense (National Center for Medical Intelligence, and the Armed Forces Health Surveillance Division); Agriculture (Animal and Plant Health Inspection Service); Interior (U.S. Geological Survey, and the National Parks Service); State; Transportation; Veteran Affairs; and the DHS Office of Health Security.

To address our third objective, we reviewed a selection of NBIC's COVID-related products developed for DHS and external stakeholders during the course of the pandemic (January 2020 to June 2023) and reports from two exercises conducted with federal partners during this period.¹⁰ We also interviewed NBIC and other DHS officials. As described above, we also conducted interviews with 12 federal interagency partners and two national public health associations to obtain their perspectives on NBIC's COVID-19 related products and any applicable lessons learned regarding information sharing and coordination during the pandemic.

We conducted this performance audit from July 2022 to November 2023, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Biosurveillance Integration

According to the October 2022 National Biodefense Strategy and Implementation Plan, biosurveillance is the process of gathering, integrating, interpreting, and communicating essential information related to all-hazard threats or disease activity affecting human, animal, or plant health. The purpose of biosurveillance is to (1) achieve early detection and warning, (2) contribute to overall situational awareness of the health impacts of the incident, and (3) enable better decision-making at all levels.¹¹

¹⁰According to DHS, exercises are intended to help build preparedness to threats and hazards by (1) testing and validating plans, policies, procedures, and capabilities; and (2) identifying resource requirements, capability gaps, strengths, areas for improvement and potential best practices.

¹¹White House, *National Biodefense Strategy and Implementation Plan* (Washington D.C.: October 2022).

Our prior work has shown that numerous surveillance programs and systems exist in the U.S. at various levels of government and in the private sector to monitor biological threats.¹² However, these programs and systems were developed separately for a variety of mission objectives. The data needed to detect an infectious disease outbreak or bioterrorism may come from a variety of governmental and non-governmental sources, including hospitals, laboratories, public health agencies, and more. Aggregating and integrating data across multiple sources is important to help recognize the nature of a biological threat or understand its scope. The collection and analysis of multiple streams of data across various domains to provide federal partners and stakeholders with a synthesized view of the information is called biosurveillance integration.

NBIC Roles, Responsibilities and Interagency Partners

The 9/11 Commission Act established NBIC to enhance the capability of the federal government to rapidly identify, characterize, localize, and track a biological event of national concern by integrating and analyzing data relating to human health, animal, plant, food, and environmental monitoring systems.¹³ Once NBIC identifies an applicable biological event, the center is to disseminate alerts and other information to federal partners and SLTT governments to enhance their ability to respond.

To achieve its objectives, NBIC coordinates with federal and other stakeholders that have information that it can use to help identify events of national significance. The community of federal interagency stakeholders is known as the National Biosurveillance Integration System, or NBIS. The NBIS is a consortium of federal partners that was established to rapidly identify and monitor biological events of national concern and to collect; analyze; and share human, animal, plant, food,

¹²For example, see GAO, *Biodefense: Opportunities to Address National Strategy and Programmatic Challenges*, [GAO-22-105733](#) (Washington D.C.: Feb. 17, 2022); GAO, *COVID-19: Pandemic Lessons Highlight Need for Public Health Situational Awareness Network*, [GAO-22-104600](#) (Washington, D.C.: June 23, 2022); GAO, *Zoonotic Diseases: Federal Actions Needed to Improve Surveillance and Better Assess Human Health Risks Posed by Wildlife*, [GAO-23-105238](#) (Washington, D.C.: May 31, 2023).

¹³6 U.S.C. § 195b.

and environmental biosurveillance information.¹⁴ The NBIS community predates the enactment of the 9/11 Commission Act and the establishment of NBIC.

The 9/11 Commission Act outlined several responsibilities for NBIS member agencies. For example, member agencies are to use their best efforts to integrate biosurveillance information into NBIC with the goal of promoting information sharing between federal and SLTT governments to detect biological events of national concern. Table 1 provides a list of requirements for NBIC and NBIS member agencies as outlined in the 9/11 Commission Act.

Table 1: 9/11 Commission Act Requirements for NBIC and NBIS Member Agencies

Requirements for the National Biosurveillance Integration Center (NBIC)	<ul style="list-style-type: none">• Consolidate data from all relevant surveillance systems maintained by member agencies across human, animal, and plant domains• Seek private sources of surveillance when such sources would enhance coverage of gaps• Use an IT system with the best available statistical and other analytical tools to identify and characterize biological events of national concern in as close to real time as practical• Provide the infrastructure for integration including IT systems and space, and support for personnel from member agencies with sufficient expertise to analyze and interpret data• Work with member agencies to create IT systems that use the minimum amount of patient data necessary and consider patient confidentiality and privacy in all stages of development• Alert member agencies as well as public health agencies of state, local, and tribal governments (in coordination with or through member agencies) of incidents that could develop into a biological event of national concern
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¹⁴The national biosurveillance capability also depends upon participation from SLTT governments, as few of the resources required to support the capability are wholly owned by the federal government. The responsibility and capacity for collecting much of the information related to plant, animal and human health, food, and environmental monitoring resides within SLTT governments, or private sector entities. These include hospitals and other private health care providers that generally coordinate with their SLTT governments in reporting data on health events.

Requirements for National Biosurveillance Integration System (NBIS) member agencies

- Use best efforts to integrate biosurveillance information into the NBIC, with the goal of promoting information sharing between federal, state, local, and tribal governments to detect biological events of national concern
- Provide timely information to assist the NBIC in maintaining biological situational awareness for accurate detection and response purposes
- Enable the NBIC to receive and use biosurveillance information from member agencies to carry out its requirements
- Connect the biosurveillance data systems to the NBIC data system under mutually agreed protocols
- Participate in the formation of strategy and policy for the operation of the NBIC and its information sharing
- 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
- Retain responsibility for the surveillance and intelligence systems of the agency, if applicable

Source: GAO analysis of 9/11 Commission Act, 6 U.S.C. § 195b. | GAO-24-106142

Although federal law does not designate required NBIS member agencies, NBIC officials identified 16 agencies that serve as its federal partners and are represented on the NBIC Advisory Board (see fig. 1).¹⁵

Figure 1: National Biosurveillance Integration System Federal Partners



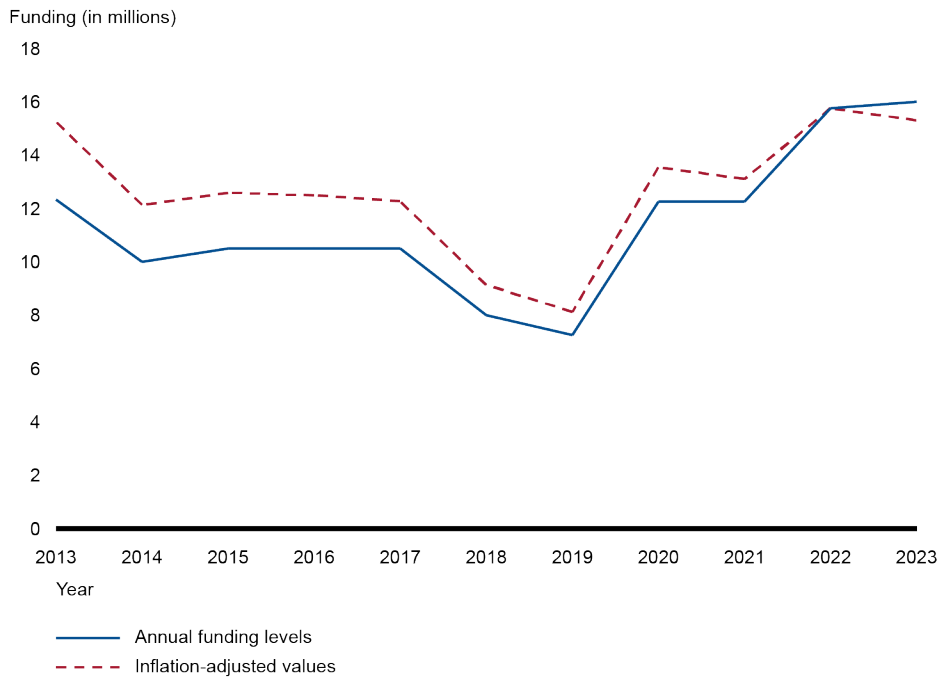
Source: GAO analysis of National Biosurveillance Integration Center information and Advisory Board Charter, Department of State, United States Agency International Development, United States Postal Service, Department of Transportation, Department of Veterans Affairs, Department of Health and Human Services, Department of Homeland Security, United States Department of Agriculture, Department of Labor, Department of Justice, Environmental Protection Agency, United States Department of Interior, Department of Defense, Office of the Director of National Intelligence, Department of Commerce. | GAO-24-106142

¹⁵In some federal departments, more than one component is represented on NBIC’s Advisory Board. Some of these departments, such as the Department of Health and Human Services (HHS) and the U.S. Department of Agriculture (USDA), have major mission responsibilities for collecting health data that may indicate an outbreak of a disease or other biological event. Other departments may collect data or have subject matter expertise that may be used during the course of a biological event.

NBIC Organization and Governance

NBIC is situated within the DHS Countering Weapons of Mass Destruction (CWMD) office in its Information Analysis Directorate.¹⁶ As of April 2023, NBIC had 6 federal employees and approximately 30 contract employees. In fiscal years 2022 and 2023, NBIC funding was approximately \$16 million annually, which represents a significant increase over pre-pandemic levels. See figure 2 for additional information on NBIC’s funding history over the past 10 years.

Figure 2: National Biosurveillance Integration Center (NBIC) Annual Funding, Fiscal Years 2013-2023



Source: GAO analysis of NBIC funding data. | GAO-24-106142

¹⁶The CWMD office, formed by DHS in December 2017 and established by statute in December 2018, is a reorganization of several DHS offices, including the Domestic Nuclear Detection Office and Office of Health Affairs. See Pub. L. No. 115-387, 132 Stat. 5162 (2018). Prior to the formation of CWMD, NBIC was situated within the Office of Health Affairs under the DHS Chief Medical Officer.

Accessible data for Figure 2: National Biosurveillance Integration Center (NBIC) Annual Funding, Fiscal Years 2013-2023 (funding in millions)

Year	Annual funding levels	Inflation-adjusted values
2013	12.3338	15.2526
2014	10	12.1317
2015	10.5	12.5944
2016	10.5	12.491
2017	10.5	12.2717
2018	8	9.13561
2019	7.256	8.1268
2020	12.256	13.5463
2021	12.256	13.1053
2022	15.756	15.756
2023	16	15.3045

Source: GAO analysis of NBIC funding data. | GAO-24-106142

The NBIC Advisory Board serves as a governing body to the center and consists of Assistant Secretary-level federal officials, or their designees, from NBIS member departments and agencies. The Advisory Board is a senior-level body for coordination and communication regarding integrated biosurveillance by NBIC among its federal partners. According to its May 2022 charter, the Advisory Board aims to provide input on and timely resolution of NBIC operational, programmatic, and scientific issues affecting the broader biosurveillance community. The Board also provides recommendations to DHS for assistance in achieving NBIC goals. The Advisory Board is to meet at least twice per year and is chaired by the CWMD Assistant Secretary, with a co-chair rotated annually among the board members by a majority vote.

An NBIC Interagency Working Group also exists to provide support and assist the Advisory Board in addressing NBIC operational, programmatic, and scientific issues. The NBIC director chairs the working group, which consists of senior-level federal officials from NBIS member departments and agencies and the Executive Office of the President who are authorized to make recommendations on behalf of their organizations.¹⁷

¹⁷Each agency is to have at least one working group member, but can have more based on the relevance to their missions of the topics to be covered by the working group or sub-working groups.

NBIC Enhanced Data Collection and Began Addressing Challenges, but Could Better Assess Results

NBIC Enhanced Data Collection Methods to Inform Its Products and Activities

In recent years, NBIC took steps to enhance its ability to collect data about biological events by adopting new software to collect open-source (publicly available) data and information. NBIC also strengthened its partnerships with other federal agencies and obtained additional data from the private sector. NBIC integrates the data it gathers from these sources to produce a range of products, which it distributes to its federal and SLTT partners and other customers.

Open-Source Data

According to NBIC officials, its analysts improved their ability to collect and consolidate open-source data and information from the internet using automated and manual methods. NBIC's primary sources for open-source data are government agencies', international health organizations', and domestic and international news organizations' websites.

NBIC officials stated that the center's Biofeeds software is its principal tool for collecting and organizing open-source data. Biofeeds automatically collects and categorizes about 15,000 articles daily.¹⁸ Biofeeds downloads these articles from different data feeds, such as a news media aggregator and government websites, throughout the day. In addition, NBIC analysts manually add articles to Biofeeds from sources that the software cannot automatically access, such as articles from websites that require subscriptions. To enhance Biofeed's capabilities, NBIC officials told us that they have iteratively updated the software since 2017, for instance, by adding around 600 new data feeds in fiscal year 2022.

¹⁸NBIC officials also use Biofeeds to compile daily reports summarizing the data collected using this software. NBIC tailors and shares these daily reports with federal partners that request them, such as the Department of State and the U.S. Department of Agriculture.

In addition, NBIC officials told us they continue to obtain open-source data by manually accessing other information and data sources. These officials regularly collect open-source data from the websites of domestic and international human, animal, and plant health agencies, among others. For example, NBIC analysts obtained data on COVID-19 cases, hospitalizations, vaccinations, and deaths from the Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC)'s public websites, among other sources. To monitor the ongoing highly pathogenic avian influenza outbreak, NBIC obtains data from the websites of animal health agencies such as USDA, the Canadian Food Inspection Agency, and the World Organization for Animal Health.

Partner Data

NBIC accesses a variety of federal systems to obtain data relevant to its missions, and the center has enhanced its access to DHS data in recent years. For example, according to NBIC officials, its analysts routinely review epidemiological data obtained from CDC's Epidemic Information Exchange system. According to the CDC, federal, state, and local public health officials use this system to share information about unusual disease outbreaks and potential public health events affecting multiple jurisdictions. In recent years, NBIC obtained access to U.S. Customs and Border Protection flight and cargo data, which NBIC can use to identify possible paths for international disease transmission through airports. For COVID-19, NBIC accessed the HHS Protect website to obtain data on COVID-19 cases, hospitalizations, and deaths.¹⁹

NBIC also enhanced its ability to access data about biological events by forming two partnerships with other federal agencies. NBIC and the Department of Veterans Affairs (VA) formed a data-sharing partnership in 2015. This partnership has enabled VA-authorized NBIC analysts to access information derived from deidentified and aggregated VA medical data since June 2017, according to VA officials. NBIC also obtains data on animal biological events from the Department of the Interior's Wildlife

¹⁹HHS Protect had a public data hub and a secure government data hub which held data not accessible to the general population. In February 2023, HHS stopped updating the public portal with COVID-19-related data. These data are instead posted to CDC's COVID-19 Data Tracker website.

Example of a biological event monitored by the National Biosurveillance Integration Center

Marburg Virus Disease in Equatorial Guinea

Marburg Virus Disease is a zoonotic disease related to Ebola. It is a viral hemorrhagic fever with a case fatality rate of 23-90%. Public health officials detected the first case of this disease in Equatorial Guinea in February 2023. These officials, in coordination with the World Health Organization, worked to contain the outbreak by quarantining affected areas and deploying experts to provide medical care. During this outbreak, health officials in Equatorial Guinea reported 40 cases of Marburg Virus Disease, and 35 of these cases were fatal. This outbreak ended in June 2023.

African fruit bats are a known reservoir of this virus. Symptoms of the disease include chest pain, vomiting, sore throat, abdominal pain, diarrhea, fever, and massive hemorrhaging. No treatments, other than supportive care, exist.



Source: GAO analysis of data from Centers for Disease Control and Prevention, National Biosurveillance Integration Center; Natalia/stock.adobe.com (photo). | GAO-24-106142

Health Information Sharing Partnership Event Reporting System (WHISPer).²⁰ According to Interior officials, NBIC was a key partner in a 2017 WHISPer upgrade project that made it easier for state and local officials to report animal death and illness events. In addition, NBIC officials told us that this upgrade made it easier for the center's analysts to extract data from WHISPer for additional analysis.

Further, NBIC officials told us that their federal liaison program continues to facilitate the center's access to agency data and helps NBIC develop its products. NBIC currently has liaisons with USDA, Interior, and VA. Each of these agencies assigned a detailee to NBIC, who helps NBIC obtain data from their respective agency and provides specialized subject matter expertise.²¹ For instance, NBIC officials told us that their USDA liaison provides NBIC with access to specialized information about animal

²⁰WHISPer is a database used to track historic and ongoing wildlife mortality (death) and/or morbidity (illness) events. The primary goal for this website is to provide natural resource management partners and the public with timely and accurate information on locations where wildlife biological events are occurring or have occurred to inform preparation and decision-making.

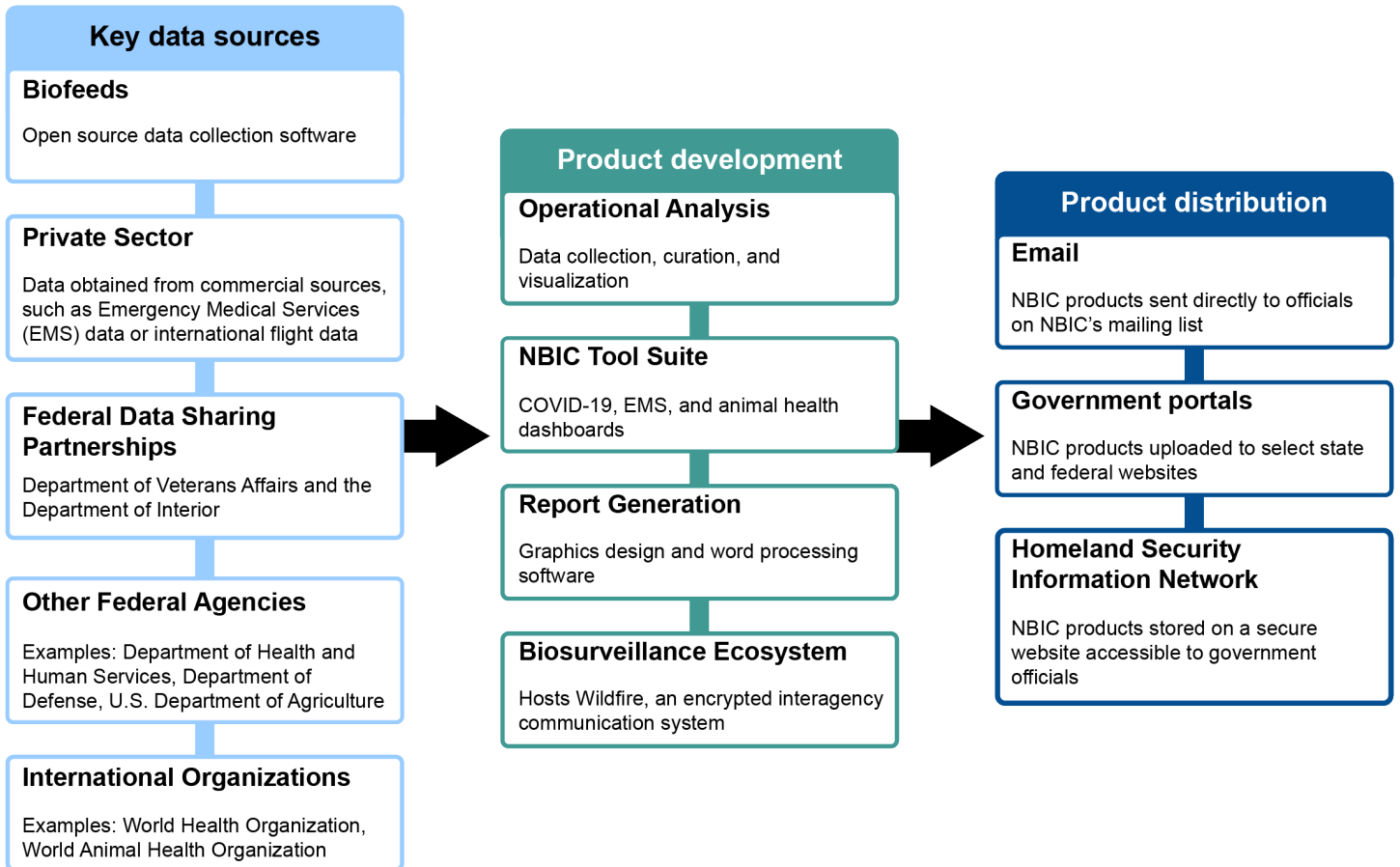
²¹NBIC partially funds its three liaisons, who remain employees of their respective agencies.

health. In addition, NBIC's liaisons told us that they help the center share its products with their colleagues.

NBIC also obtains data from private sector information sources, which supplement the open-source and partner-provided data sources described above. For example, NBIC officials told us that the center purchased access to a private sector biosurveillance data system that provides emergency medical services records.²² NBIC monitors this data system for indications of unusual biological events or trends that could indicate that a biological event is occurring and discusses any findings during its daily interagency call with stakeholders. NBIC also subscribes to a database that is updated daily with data from peer-reviewed scientific sources. As shown in Figure 3, NBIC uses the data it gathers from these sources to create the products it distributes to partners and stakeholders.

²²Emergency Medical Services is a system that provides emergency medical care, and includes 911 telephone dispatch centers, medical treatment by first responders, and emergency transportation to hospitals. Emergency Medical Services records include information about illnesses, injuries, and the treatment provided, among other things.

Figure 3: National Biosurveillance Integration Center (NBIC) Product Development and Distribution Process



Source: GAO analysis of NBIC information. | GAO-24-106142

Accessible text for Figure 3: National Biosurveillance Integration Center (NBIC) Product Development and Distribution Process

Key data sources	Product development	Product distribution
<p>Biofeeds: Open source data collection software</p> <p>Private Sector: Data obtained from commercial sources, such as Emergency Medical Services (EMS) data or international flight data</p> <p>Federal Data Sharing Partnerships: Department of Veterans Affairs and the Department of Interior</p> <p>Other Federal Agencies: Examples: Department of Health and Human Services, Department of Defense, U.S. Department of Agriculture</p> <p>International Organizations: Examples: World Health Organization, World Animal Health Organization</p>	<p>Operational Analysis: Data collection, curation, and visualization</p> <p>NBIC Tool Suite: COVID-19, EMS, and animal health dashboards</p> <p>Report Generation: Graphics design and word processing software</p> <p>Biosurveillance Ecosystem: Hosts Wildfire, an encrypted interagency communication system</p>	<p>Email: NBIC products sent directly to officials on NBIC’s mailing list</p> <p>Homeland Security Information Network: NBIC products stored on a secure website accessible to government officials</p> <p>Government portals: NBIC products uploaded to select state and federal websites</p>

Source: GAO analysis of NBIC information. | GAO-24-106142

NBIC Primary Products and Coordination Activities

NBIC produces three primary written biosurveillance products—Monitoring Lists, Biosurveillance Event Reports, and Spot Reports (see table 2), and distribution of these products has grown since 2020. NBIC distributes these products to its stakeholders using three methods: (1) email, (2) posting the products on a secure DHS website, and (3) posting its products on the internal websites of interagency partners, such as DOD and HHS. NBIC produces different versions of its products for federal, congressional, SLTT, private sector, and international audiences.²³ NBIC officials told us that the federal versions of its products may contain sensitive information, which NBIC does not include in the other versions of its products. In particular, NBIC officials told us they distribute their Monitoring List product—a summary of ongoing acute biological events—on a daily basis to an audience of approximately 1,500 federal agency recipients, 650 SLTT recipients, 100 congressional and judicial recipients, 40 international recipients, and 10 private sector recipients.

²³In this context, “recipient” refers to a unique email address in NBIC’s database of contacts. According to NBIC officials, these email addresses may be for unique individuals, email distribution lists, or addresses that are accessible by more than one official. International distribution of NBIC’s products is currently limited to officials in Australia, Canada, New Zealand, and the United Kingdom.

Table 2: National Biosurveillance Integration Center’s (NBIC) Primary Written Products

Product name	Update schedule	Description
Monitoring List	Daily (Monday-Friday)	Daily summaries of the acute biological events that NBIC is monitoring.
Biosurveillance Event Report	Issued and periodically updated as needed (e.g., weekly, monthly, etc.)	Detailed reports about major biological events likely to last for more than 30 days. Includes descriptions of the event, affected locations, and impacted populations.
Spot Report	Issued as soon as possible; not updated.	Brief summaries about isolated biological events intended to provide rapid awareness.

Source: GAO analysis of National Biosurveillance Integration Center information. | GAO-24-106142

According to NBIC officials and data we reviewed, the number of stakeholders receiving NBIC’s products grew by approximately 50 percent (from about 1300 to about 1950 recipients) during the first year of the COVID-19 pandemic. NBIC officials told us that, in general, the number of federal recipients on NBIC’s distribution lists has remained relatively steady since 2019, while the number of congressional recipients fluctuated. SLTT recipients of NBIC’s products has increased over time, according to NBIC officials.²⁴ See appendix I for our analysis of a selection of Monitoring List emails sent between September 2022 and March 2023.

NBIC also conducts a range of activities to support coordination among biosurveillance stakeholders. For instance, as noted above, NBIC holds a daily interagency conference call with stakeholders. According to NBIC officials, these calls facilitate information sharing and discussions on significant human, wildlife, and plant biological events with NBIC’s partners and stakeholders. These discussions encompass both regional and global biological events. According to NBIC officials, an average of 40 people attend these calls, with regular participation by officials from federal agencies such as HHS, USDA, and Interior.

²⁴NBIC was unable to provide more precise year-by-year figures for changes in the number of recipients over time because it did not have a standardized process with a specific schedule for removing duplicate or unused email addresses from its distribution list before 2022.

Example of a biological event monitored by the National Biosurveillance Integration Center:

Highly Pathogenic Avian Influenza (HPAI H5N1) in the United States

Avian influenza is an extremely infectious and potentially fatal disease that primarily infects domestic and wild birds. In 2014 and 2016, avian influenza outbreaks in the U.S. resulted in the death of more than 50 million chickens, turkeys, and other birds.

HPAI H5N1 is a type of avian influenza. The U.S. Department of Agriculture detected this disease in the U.S. in January 2022. This outbreak resulted in the death of more than 17 million poultry in the United States. Globally, HPAI H5N1 has been detected in more than 60 countries, most in North America or Europe.

Avian influenza can infect humans but, according to the U.S. Centers for Disease Control and Prevention, the risk of human infection is low.



Source: GAO analysis of information from the National Biosurveillance Integration Center, Snowbunny/stock.adobe.com (photo). | GAO-24-106142

NBIC officials told us that the center's Request for Information process remains a key mechanism that they use to coordinate activities and exchange biosurveillance information with the center's stakeholders. For example, according to NBIC officials, they used the Request for Information process to obtain international passenger flight data provided by U.S. Customs and Border Protection to conduct analyses of travel patterns during the initial stages of the COVID-19 pandemic. In addition, Requests for Information may evolve into recurring information products. For instance, NBIC began providing U.S. Customs and Border Protection with a weekly Biosurveillance Event Brief during the initial stages of the COVID-19 pandemic, which it continues to provide. In addition, NBIC routinely responds to Requests for Information from its interagency partners.

Lastly, NBIC holds monthly Biosurveillance Presentation Series meetings to facilitate information sharing among the center and its partners. These meetings consist of presentations on biosurveillance activities relevant to human, animal, agricultural, and environmental health topics. For example, according to NBIC officials, they gave a presentation about their Biofeeds software. In addition, HHS officials introduced an interagency

partnership they established to coordinate the development of medical countermeasures, such as vaccines.²⁵

NBIC Is Taking Steps to Address Data Access, Personnel, and Technology Implementation Challenges

Data Access Challenges

NBIC continues to face challenges in obtaining access to some data managed by other federal agencies, but it is taking steps to address them. For example, we reported in 2015 that NBIC was unable to obtain some data from HHS's Food and Drug Administration, the VA, and the CDC. In particular, CDC officials told us that some of its programs are subject to data use agreements. These agreements do not allow CDC to share the data it gathers outside the terms of those agreements and as allowed or required by applicable federal laws, such as the Privacy Act of 1974 and the Freedom of Information Act.²⁶

CDC officials told us that they continue to collect data from SLTT governments and health care facilities to monitor domestic public health and provide early warning of biological events. However, the CDC remains unable to share the data it collects with other federal agencies. Moreover, CDC officials told us that their agency's data sharing agreements are the product of negotiations between individual SLTT governments and CDC. Renegotiating these agreements to grant other federal agencies, such as NBIC, direct access to the raw data that CDC collects from these SLTT governments is impractical, according to CDC officials. Accordingly, NBIC uses data it obtains from CDC's public websites and other sources.

While NBIC continues to face limitations accessing data from some agencies, NBIC officials told us they are taking steps to focus their data collection efforts on identifying and enhancing access to targeted data sources at VA and Interior that are not subject to the obstacles we identified in 2015. For example, NBIC and VA told us that they

²⁵Housed within the Administration for Strategic Preparedness and Response, the HHS Coordination Operations and Response Element leads the coordination of the acquisition and distribution of COVID-19 vaccine and therapeutic treatments. This organization includes federal interagency partners and public health and industry stakeholders and is intended to support capabilities to respond to future public health threats.

²⁶5 U.S.C. §§ 552a; 552. [GAO-15-793](#).

established a data sharing partnership in 2015, which provides VA-authorized NBIC personnel with access to a database of aggregated VA medical information. Since this database does not contain patient-level health information, VA can share this information with authorized NBIC personnel. As described above, NBIC officials can now use Interior's WHISPers database to obtain data about animal death and illness events that was previously unavailable to them.

Other federal agencies face similar challenges in integrating biosurveillance data, further complicating the ability of NBIC to carry out its mission of integrating biosurveillance data collected across the federal government. For example, USDA's Animal and Plant Health Inspection Service and Interior's U.S. Geological Survey are building a national wildlife disease database that will use WHISPers as its foundation. We reported in May 2023 that interoperability challenges between WHISPers and other relevant wildlife databases, as well as concerns over sharing sensitive commercial data, prevent these two agencies from integrating their wildlife disease data.²⁷

In 2022, we reported that HHS had made minimal progress in establishing a near real-time nationwide public health situational awareness and biosurveillance network required by law.²⁸ In particular, we found that HHS had not yet defined interoperability standards for its

²⁷The Animal and Plant Health Inspection Service tracks diseases in wildlife that could affect agriculture animals. The U.S. Geological Survey is the lead federal agency for wildlife disease research and surveillance. GAO, *Zoonotic Diseases: Federal Actions Needed to Improve Surveillance and Better Assess Human Health Risks Posed by Wildlife*, [GAO-23-105238](#) (Washington, D.C.: May 31, 2023). To address these and other challenges, we made four recommendations to USDA and Interior, directing them to follow leading practices for collaboration and work to resolve data sharing concerns. As of November 2023, these agencies have not yet taken action to implement these recommendations.

²⁸HHS is charged with the creation of a nationwide situational awareness and biosurveillance network for human health, among other things. As noted above, NBIC's mission is to consolidate data from all relevant surveillance systems maintained by other federal agencies across human, animal, and plant domains. GAO, *COVID-19: Pandemic Lessons Highlight Need for Public Health Situational Awareness Network*, [GAO-22-104600](#) (Washington, D.C.: June 23, 2022). We made 12 recommendations to the Department of Health and Human Services to develop a leadership structure charged with developing a nationwide situational awareness and biosurveillance network. As of November 2023, the department had not yet taken action to implement these recommendations. See Pandemic and All-Hazards Preparedness Act, Pub. L. No. 109-417, 120 Stat. 2831 (2006); Pandemic and All-Hazards Preparedness Reauthorization Act of 2013, Pub. L. No. 113-5, 127 Stat. 161 (2013); Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019, Pub. L. No. 116-22, 133 Stat. 905 (2019).

biosurveillance network, which made it challenging for state and local public health officials to share data with HHS or with one another. The lack of significant progress in creating this nationwide network of human health data systems, despite longstanding legislative requirements to do so, illustrates the inherent challenges that NBIC faces in creating a similar biosurveillance system that integrates data from multiple sources.

Personnel Challenges

NBIC officials told us that its liaisons are an important source of specialized information and help the center disseminate its products. However, only three agencies—Interior, USDA, and VA—currently provide a liaison to NBIC. NBIC partially funds its liaisons to obtain personnel dedicated to increasing information sharing between their respective departments and NBIC. However, resource constraints and competing priorities among partner agencies challenge NBIC’s ability to expand its liaison program to include more agencies. For example, an official from HHS’s Administration for Strategic Preparedness and Response told us that their agency could not provide a detailee for NBIC’s liaison program because of their agency’s own resource constraints and other staffing priorities.

Despite these challenges, NBIC officials told us that they have efforts underway to expand their liaison program. According to NBIC officials, they plan to establish liaisons with three additional agencies: the Department of State, the Department of Defense (DOD), and HHS. NBIC officials told us that the center has identified the funding to establish these liaisons. For example, NBIC is in discussions with HHS’s Center for Forecasting and Outbreak Analytics about assigning an NBIC analyst to serve as a liaison between the two agencies. According to NBIC officials, this relationship may provide opportunities to enhance NBIC’s modeling capabilities in addition to facilitating interagency collaboration. NBIC officials told us that their goal is to grow the liaison program by obtaining three to six additional liaisons.

Technology Development Challenges

NBIC initiated efforts to further develop a software platform, the Biosurveillance Ecosystem, which it intends to use as a central hub for securely storing searchable data and to develop the center’s products. According to NBIC officials, this platform will support NBIC’s mission under the 9/11 Commission Act to consolidate data and provide information technology infrastructure for biosurveillance data integration,

among other functions. NBIC officials told us they began developing the Biosurveillance Ecosystem in conjunction with DOD's Defense Threat Reduction Agency, but NBIC took over sole development in 2018.

NBIC currently uses the Biosurveillance Ecosystem to host an encrypted communication system, Wildfire, which NBIC and approved interagency partners use to share information about biological events. In the future, NBIC officials told us that the Biosurveillance Ecosystem will provide the center and its partners with new analytical tools, an improved data storage architecture, and facilitate interagency data integration. In addition, NBIC officials said that the platform will enable its analysts to view and analyze data from WHISPer and Biofeeds together.

According to NBIC officials, development of the Biosurveillance Ecosystem was slowed by the COVID-19 pandemic, reorganization efforts within DHS, and because the previous contract vehicle did not provide sufficient resources to develop the features for the platform that NBIC requires. As a result, as of June 2023, only the Biosurveillance Ecosystem's communication components were operational. However, NBIC officials told us that the center and DHS's Science and Technology Directorate collaborated on a new contract, which the two agencies awarded in winter 2023. This contract provides additional resources for NBIC to develop the Biosurveillance Ecosystem. According to NBIC officials, they met with the contractor in June 2023 to initiate further development of the Biosurveillance Ecosystem.

Improved Performance Measures Could Help NBIC Assess Program Results

NBIC uses two strategic planning documents—a strategic plan and a separate implementation plan—to guide its programs. However, these documents lacked clearly defined performance measures and the latter was delayed for several years, making it infeasible to perform the identified actions within the proposed timeframe. In 2019, CWMD issued a five-year strategic plan for NBIC that established the center's strategic goals and associated performance measures for fiscal years 2019

through 2023.²⁹ The strategic plan includes six objectives, two for each of the three strategic goals, that broadly describe key efforts that NBIC would take to achieve those goals. For each of these objectives, the plan describes a desired program outcome and identifies one performance measure that NBIC would use to evaluate its progress in achieving the stated outcome.

While these goals, objectives, outcomes, and performance measures represent important elements of a strategic planning framework, in some instances the performance measures are not clearly defined, and all the strategic plan's quantitative performance measures lack numerical targets.³⁰ For example, one of NBIC's objectives is to evaluate its current products and services against the information needs and gaps of DHS's components, and to tailor NBIC's products based on those needs. NBIC is to evaluate its progress in meeting this objective using data from its annual survey of federal stakeholders, according to the strategic plan. Specifically, NBIC indicated that it would assess performance as a "percent improvement" as reported by DHS components on the survey. However, NBIC did not establish specific numerical targets for this and other objectives, as part of the strategic plan. Moreover, in our review of NBIC's 2023 stakeholder survey questions, there were no questions pertaining to participant needs that would allow for a quantitative assessment of improvement (see app. II for the list of questions included in the 2023 survey).

To support NBIC's strategic plan, CWMD was to issue an annual implementation plan that would identify goals and objectives and contain specific metrics to track NBIC's progress and effectiveness. Although CWMD issued the strategic plan in 2019, it did not complete the first annual implementation plan until March 2023. As an interim measure, the strategic plan included an appendix that identified a range of actions that NBIC was to complete in 2019 to support each objective. However, NBIC did not issue any other such guidance or implementation plans between

²⁹Department of Homeland Security, *Strategy for Integrated Biosurveillance* was compiled pursuant to direction in the joint explanatory statement accompanying the Consolidated Appropriations Act, 2018, calling for DHS to submit a five-year strategic plan that outlines NBIC's proposed capabilities, objectives, a roadmap to achieving those objectives, and performance metrics by which to measure success. Staff of H. Comm. on Appropriations, 115th Cong., Explanatory Statement on the Consolidated Appropriations Act, 2018, Pub. L. No. 115 141, 132 Stat. 348, at 990 (Comm. Print 2018).

³⁰Project Management Institute, Inc., *The Standard for Program Management, Fourth edition* (2017).

2020 and 2022. As a result, NBIC was operating without a complete set of strategic planning documents and associated performance measures for more than three years out of the five-year period specified by its strategic plan.

According to NBIC officials, they originally planned to issue annual implementation plans, but were unable to do so because of resource limitations. In particular, officials noted that the Strategy and Operations team, which develops NBIC's strategic documents, was understaffed for several years. NBIC officials told us that this branch had no federal employees and insufficient contractor support between 2017 and late 2020. However, NBIC officials told us that they were able to hire new staff in late 2021. With the additional resources, NBIC officials stated they began development of an implementation plan in June 2022, which NBIC finalized in March 2023.³¹ NBIC also began developing a new multi-year strategic plan and accompanying implementation plan in spring 2022. As of June 2023, NBIC officials told us that their goal is to complete these plans by the end of calendar year 2023.

NBIC's March 2023 implementation plan uses a collection of three to six qualitative milestones as the designated performance measures for each of the six objectives (for a total of 25). NBIC also includes a list of associated actions intended to help achieve those milestones. For example, one milestone relates to performing preliminary analyses of new data sets to determine their potential value to the NBIC mission. The associated action specifies that NBIC will perform such analyses on at least five newly identified data sets, with the goal of identifying those that merit more detailed evaluation.

However, several of the milestones are broad and it is unclear how NBIC would measure them based on the information provided in the plan. For example, one milestone is to "strengthen relationships with relevant components internal to DHS and CWMD." However, none of the listed actions align with this milestone and no additional details are included to identify how NBIC is to monitor progress toward achievement. Another NBIC milestone relates to increased use of the Wildfire communication platform to facilitate interagency information exchange. Although one related action denotes that NBIC analysts are to leverage Wildfire when addressing agency Requests for Information, there is no further detail

³¹Department of Homeland Security, *NBIC Implementation Plan FY 2022 – 2023* (Mar. 29, 2023).

describing how NBIC will increase use of the platform, how any increases will be measured, or any associated targets for usage.

Further, the implementation plan does not identify associated time frames for any of the identified milestones or supporting actions. Although the plan references a general time period of fiscal years 2022 to 2023, NBIC did not issue the plan until March 2023. As a result, it does not appear that many of the milestones and supporting actions described in this implementation plan were reasonable and achievable with only six months remaining in the plan's performance period.

Apart from the general staffing issues discussed previously, NBIC officials did not cite any specific reasons for the deficiencies we identified during our discussions about NBIC's strategic planning and performance measures. However, these officials noted they planned to take the opportunity created by our review of their strategic planning documents to improve their future strategic planning efforts. Although NBIC officials told us that a new multi-year strategic plan and supporting implementation plan was in development as of June 2023, they did not provide drafts of these plans or other supporting documentation of their planned actions. As a result, we were not able to determine if NBIC's planned actions would address the issues we identified with the prior versions of their strategic planning documents.

As we have previously reported, clearly defined performance measures are critical to enable NBIC to monitor results and assess progress.³² Federal internal controls standards provide that government agencies should use appropriate information to adequately assess performance, including establishing milestones or numerical targets, as appropriate.³³ As we have also previously reported, biodefense is an inherently complex

³²GAO, *Homeland Security: Office of Intelligence & Analysis Should Improve Privacy Oversight and Assessment of Its Effectiveness*, [GAO-23-105475](#) (Washington D.C.: Aug. 28, 2023); GAO, *Performance Measurement and Evaluation: Definitions and Relationships*, [GAO-11-646SP](#) (Washington D.C.: May 2011).

³³[GAO-14-704G](#).

and fragmented mission.³⁴ Accordingly, the development of appropriate performance measures is important to provide relevant information to NBIC's interagency stakeholders, including the Advisory Board and the NBIC Interagency Working Group. NBIC has already demonstrated its ability to develop improved performance measures in other recent planning documents we reviewed including the SLTT Engagement Strategy Implementation Plan, FY 2022-2025, which we discuss further below.³⁵ Milestones contained within this document include specific targets for performance and planned implementation time frames. By incorporating more clearly defined performance measures with associated time frames into its broader strategic planning documents, NBIC could better assess program results and share this information with DHS management and federal stakeholders.

NBIC Evaluates Its Products Through Internal Reviews and Renewed External Outreach Efforts

NBIC Evaluates the Quality and Reach of Its Products

NBIC has established processes to help ensure the quality of its written products and conducts some efforts to evaluate the extent they are accessed by customers. According to NBIC officials, analysts receive targeted training on government writing standards and use a combination of resources to help ensure product quality and consistency, including style guides, standard operating procedures, and product templates. NBIC officials told us that draft products are routinely reviewed by designated staff for accuracy, bias, readability, and suitability for the product's intended audience. For example, products written for federal agencies may contain controlled or sensitive information that NBIC does not share with non-federal agencies. According to NBIC, a Quality

³⁴GAO, *Biodefense: After-Action Findings and COVID-19 Response Revealed Opportunities to Strengthen Preparedness*, [GAO-21-513](#) (Washington, D.C.: Aug. 4, 2021). We previously reported that fragmentation occurs when more than one agency (or more than one organization within an agency) is involved in the same broad area of national interest and opportunities exist to improve service deliver; see GAO, *Fragmentation, Overlap, and Duplication: An Evaluation and Management Guide*, [GAO-15-49SP](#) (Washington, D.C.: Apr. 14, 2015).

³⁵DHS, *DHS National Biosurveillance Integration Center State, Local, Tribal, and Territorial Engagement Strategy Implementation Plan, FY 2022-2025*, December 2022.

Management Team—comprised of a lead editor who consults with the Operations and Analysis Branch Chief and their deputy before products are finalized—was also established in 2021 to provide additional review and approval of new products, such as Spot Reports.

As discussed previously, NBIC also collaborates with its interagency partners during the product development process to obtain applicable inputs on draft products and help ensure accuracy. In addition, NBIC officials stated that some of the product content and formatting changes initiated in recent years were intended to help ensure consistency and quality, and reduce potential errors. For example, NBIC reported that iterative updates were made to its primary written products in 2021-2023 to enhance consistency and uniformity across its different product types. According to NBIC officials, a new document format and production process for the Monitoring List was implemented in December 2022 to improve readability for users and reduce the introduction of errors.

NBIC also conducts some efforts to obtain information on the extent that customers access its products. NBIC officials reported that they routinely monitor the GovDelivery email platform to verify that products were successfully delivered and evaluate how many of its federal and SLTT customers opened NBIC's notification emails.³⁶ The GovDelivery platform is used to distribute the daily Monitoring List to federal and SLTT agency officials as well as notifications for other NBIC products, including its Spot Reports and Biosurveillance Event Reports.³⁷ Other customers including congressional, international, and private sector subscribers receive NBIC products via direct email accounts.³⁸ NBIC reported that it reviews GovDelivery email open rates on a frequent basis and tracks this statistic as a performance indicator. According to NBIC data, between calendar years 2019-2022, average annual open rates for NBIC's emails ranged between 15.9 to 20.8 percent. NBIC officials also noted that the monitoring list is formatted so that most recipients can see a summary preview of the key information without opening up the attachment.

³⁶GovDelivery is a service that partners with government organizations for content delivery via a web-based e-mail subscription management system.

³⁷These products are issued less frequently and made available through DHS' Homeland Security Information Network.

³⁸In May 2023, NBIC reported that products were distributed to approximately 1500 federal emails/listservs (which includes those within the Department of Defense) and approximately 650 SLTT emails/listservs. A listerv is an electronic mailing list that delivers messages to multiple subscribers.

Lastly, NBIC officials reported that efforts are underway to deploy a new software system that will be used to manage its product distribution list and provide a platform for its written products. According to NBIC officials, the new system will be an improvement over existing tools that require separate, manual processes to manage stakeholder contacts, agency requests for information, and document delivery activities. Among other reported benefits, NBIC officials cited that the new system will be able to provide metrics regarding how often documents are opened, and should address some concerns identified by stakeholders regarding accessing the Homeland Security Information Network, which is currently used to house some of NBIC's products. According to NBIC officials, the software development for this project is largely complete and, as of April 2023, the system was being reviewed by DHS for operational approval.

NBIC's External Outreach Was Limited in Recent Years, but It Has Taken Steps to Obtain Additional Stakeholder Feedback

According to NBIC officials, DHS reorganization efforts, budgetary issues, and staffing contract limitations, as well as competing demands posed by the COVID-19 pandemic, limited ongoing coordination and outreach efforts between 2018 and 2021. Specifically, NBIC officials reported that several of its employees were reassigned to DHS' newly created CWMD office in December 2017, including both of the federal staff from its Strategy & Outreach team, which is largely responsible for NBIC's external outreach efforts. In addition to reduced overall funding for NBIC in fiscal year 2019, center officials told us that NBIC's staffing contracts were extended for only short periods of time until 2021, which generally made it difficult to attract and retain necessary contractor positions.³⁹ As a result of these impacts, NBIC discontinued several key coordination and outreach activities during this period, including its biennial federal stakeholder survey, as well as the NBIC Advisory Board and NBIC Interagency Working Group.

With additional funding and a new staffing contract, NBIC began restaffing its Strategy & Outreach team in fiscal year 2021 and renewed efforts to engage with stakeholders. According to NBIC officials, one of

³⁹According to NBIC, the existing contract used to staff many of its positions was at the end of its service life and extended for only short periods at a time (e.g., 6-months, 1-month). NBIC reported that a new 5-year staffing contract was implemented in April 2021 that has facilitated its recruiting and planning efforts.

the initial priorities for the Strategy & Outreach team was reinstating the NBIC Advisory Board and NBIC Interagency Working Group, both of which reconvened in 2021.⁴⁰

According to NBIC officials, the Federal Stakeholder Survey serves an important role to assess the usefulness of its products and activities and to determine what improvements should be made. However, until recently, the last biennial Federal Stakeholder Survey that NBIC conducted was for the period of 2016-2017. NBIC officials administered the renewed Federal Stakeholder Survey in March 2023 and plan to administer future surveys on an annual basis. The 2023 survey was administered by email to all federal recipients on its product distribution list and consisted of 18 questions that include a combination of multiple choice and open-ended questions (see appendix II for the 2023 survey questions). According to NBIC, of the 1522 surveys delivered, a total of 148 agency officials responded, 53 percent of which were from within DHS.⁴¹

The following is a summary of selected survey results NBIC provided regarding participant perspectives on NBIC's written products:

- Accuracy. 94 percent of respondents agreed or strongly agreed that NBIC's products are correct and reliable.
- Timeliness. 88 percent of respondents agreed or strongly agreed that NBIC's products were received in time to make a decision or incorporate into a product.
- Useful. 84 percent of respondents agreed or strongly agreed that NBIC information is used within their organization. 52 percent of participants also reported that an NBIC product was the first place they became aware of an emerging biological event.

⁴⁰The Advisory Board held its kickoff meeting in October 2021 and formally approved the charter documents in a March 2022 meeting.

⁴¹The results of the survey are subject to response bias that is dependent on who chooses to respond to the survey. NBIC reported that it received responses from 46 agencies across 17 departments. NBIC received 44 responses from participants within the Departments of Health and Human Services (10), Defense (11), Agriculture (15), and State (8), which collectively comprised 30 percent of the total. While the response rates to the survey were low and the results are not generalizable, we determined that the data were sufficiently reliable for providing general context on the feedback NBIC received.

- Unique. 72 percent of respondents agreed or strongly agreed that NBIC products contain information that they were not seeing elsewhere.

Although NBIC received a relatively low response rate for its 2023 Federal Stakeholder Survey (approximately 10 percent), NBIC officials reported taking several steps to address this issue. For example, NBIC issued weekly email reminders to all recipients; provided reminder announcements during the daily interagency teleconference; included requests to complete the surveys within the written products it distributes; and coordinated with members of the Advisory Board and Interagency Working Group to encourage participation from individuals within their respective agencies. NBIC officials acknowledged that the response rate remained an area for improvement; however, they reported that the survey continues to be a critical tool to obtain quantitative feedback from many respondents on specific questions.⁴²

As part of its coordination and outreach efforts, NBIC has also taken steps to increase engagement with SLTT agencies. According to NBIC officials, SLTT customers accounted for significant increases in its customer base since 2020. In May 2022, DHS released the NBIC SLTT Engagement Strategy for FY 2022-2025, which identifies key goals and supporting objectives for establishing, strengthening, and maintaining relationships with SLTT stakeholders, among other priorities.⁴³ Among the initiatives identified for the next few years, NBIC plans to develop a list of identified SLTT biosurveillance needs through a hybrid of surveys, stakeholder engagement interviews, presentations at national conferences and meetings, and other opportunities for virtual or in-person engagement sessions.

To guide these strategic efforts, NBIC also released a supporting Implementation Plan in December 2022, which includes further details and identifies specific actions and milestones for achieving SLTT

⁴²Since August 2022, NBIC has also conducted efforts to obtain feedback directly from new customers that have signed up for its product distribution list. According to NBIC officials, approximately 10 percent of the 279 new customers participated in subsequent phone interviews to provide product feedback, as of August 2023.

⁴³DHS, *DHS National Biosurveillance Integration Center State, Local, Tribal, and Territorial Engagement Strategy, FY 2022-2025* (May 2022). This Strategy is also intended to align with the *DHS CWMD Office State, Local, Tribal, and Territorial Engagement Strategy, FY 2022-2025*, released in September 2021.

engagement goals and objectives.⁴⁴ We have previously reported that such mechanisms represent elements of an effective framework to help evaluate program performance and monitor progress toward achieving key objectives.⁴⁵

Federal Partners Generally Spoke Positively about NBIC's Products

Most of the federal partners we interviewed reported favorable views of NBIC's products; however, some noted they generally did not rely on NBIC as a primary source of biosurveillance information. To obtain stakeholder perspectives on NBIC's products and activities, as well as related interagency coordination efforts, we conducted interviews with officials from 12 federal departments and agencies that serve as NBIC's federal partners.⁴⁶ The following represents selected findings for the key themes we identified through those interviews. In particular, these officials provided perspectives on (1) product quality and content, (2) product usefulness, and (3) product accessibility.

Product Content and Quality

All of the federal partners we spoke to were aware of NBIC's primary written products and nearly all (11 of 12) reported that agency staff access them on a routine basis to help inform early warning and situational awareness efforts.⁴⁷ NBIC information was widely recognized among officials we interviewed as providing a global summary of

⁴⁴DHS, *DHS National Biosurveillance Integration Center State, Local, Tribal, and Territorial Engagement Strategy Implementation Plan, FY 2022-2025* (December 2022).

⁴⁵[GAO-14-704G](#).

⁴⁶Federal departments and agencies/offices that we spoke to included the Departments of HHS (Centers for Disease Control and Prevention, Administration for Strategic Preparedness and Response, and the Food and Drug Administration); Defense (National Center for Medical Intelligence, and the Armed Forces Health Surveillance Division); Agriculture (Animal and Plant Health Inspection Service); Interior (U.S. Geological Survey, and the National Parks Service); State; Transportation; Veteran Affairs; and the DHS Office of Health Security.

⁴⁷CDC officials reported that they did not routinely access NBIC's products as a source for biosurveillance information.

significant biological events occurring across multiple domains.⁴⁸ One agency official also noted that NBIC's products are formatted to identify new information and include color-coded status indicators (e.g., worsening, improving, no change), which is helpful to monitor changing conditions.

Among the officials we interviewed, NBIC's written products were consistently viewed as accurate and reliable, and generally timely, which aligns with related findings from NBIC's March 2023 stakeholder survey. Two federal officials that serve as agency liaisons to NBIC noted that NBIC analysts conduct considerable work to ensure accuracy, including outreach to other federal agencies for additional information as applicable. None of the agency officials we interviewed identified any specific concerns about the quality of the information presented in NBIC's products. However, several commented that, in some cases, they were already aware of an emerging biological event through media reporting or their agency's own biological monitoring efforts.

In addition to using NBIC's written products, officials at eight of the 12 agencies we interviewed also reported that staff from their agency attend NBIC's daily interagency teleconference on a regular or periodic basis. Additionally, officials at eight of the 12 agencies reported receiving daily Biofeeds reports, some of which are customized for the specific information needs of their agency, such as those produced for the Departments of State and Defense. One DHS official also commented that they routinely scan NBIC's daily Biofeeds report—which they find to be more useful than the daily interagency calls—and may look at them more closely if the report concerns a particular pathogen.

Product Usefulness

Although agency officials we interviewed reported widespread use of NBIC's products, nearly all (11 of 12) noted that they also routinely look at other information sources to inform their situational awareness of biological events. CDC was widely cited as a key source of public health data, particularly during the COVID-19 pandemic. According to officials

⁴⁸Representatives from two national organizations that collectively represent SLTT public health agencies also reported that they routinely review NBIC's products and found them to be useful to monitor emerging biological threats and maintain awareness of issues that could affect its members. They noted that NBIC's products are particularly helpful to provide a global perspective, which supplements other information sources they use that are focused more domestically.

from two of the agencies we interviewed, NBIC's products were not overly duplicative of products from other sources but complemented them. Officials from two agencies also reported that NBIC's products provide a unique value because they are distributed frequently and offer a single source of easily digestible information across multiple domains.

One DHS official noted that NBIC's products remain understandable to those without a public health background, such as emergency managers, who may not routinely access other sources of information on biological events. Along these lines, officials from two agencies reported that NBIC's broad customer base provides an opportunity to disseminate biosurveillance information to a diverse group of stakeholders. For example, two of NBIC's federal liaisons noted that although their agencies each produce their own information regarding issues pertaining to animal health, NBIC's products can serve to expand the reach of related information to a broader audience on a more frequent basis.

Officials from several agencies that internally collect or monitor public health information reported more limited usefulness of NBIC's products. Specifically, officials from four of the 12 agencies we spoke to reported that although they remain on the NBIC product distribution list and engage with NBIC through other information sharing and coordination mechanisms, they generally did not rely on NBIC reports as a key source of biosurveillance information.⁴⁹ Officials from three of these agencies stated that they are often aware of emerging biological events before NBIC reporting based on their own data collection efforts or access to other sources of public health information. One agency official noted that NBIC's products are generally designed for different customers and may be more useful for emergency managers or other state and local entities. NBIC officials further supported this idea, stating that the majority of their federal audience remains outside of the public health domain, including DHS operational components and federal departments with a range of emergency management and law enforcement roles and responsibilities.

Product Accessibility

Officials from five of the federal agencies and both of the national association representatives we interviewed also reported limitations associated with accessing NBIC's products through the Homeland

⁴⁹Agencies include HHS' Centers for Disease Control and Prevention and the Administration for Strategic Preparedness and Response; DOD's National Center for Medical Intelligence; and DHS' Office of Health Security.

Security Information Network. Several federal officials suggested that technical issues or the two-factor authentication process (required for users outside of DHS) presented an obstacle to them accessing the platform more frequently.

NBIC officials were generally aware of stakeholder concerns regarding the Homeland Security Information Network. They noted that the portal was not very user-friendly but that this was an issue broader than NBIC. They also stated that, in some cases, a slow internet connection could restrict the ability for users to complete the two-factor authentication process in the time allotted.

Also, NBIC officials stated that the center sends the daily Monitoring List by email to all recipients, although most users must use the Homeland Security Information Network to obtain NBIC's two other primary written products, namely the Biosurveillance Event Reports and Spot Reports.⁵⁰ As discussed above, the new software system that NBIC is developing to manage its product distribution list is also intended to serve as a new repository for NBIC's written products. According to NBIC officials, the new system will also use dual authentication, but they anticipate that it should help reduce some of the reported limitations with the Homeland Security Information Network.

NBIC Conducted a Range of Efforts to Inform Stakeholders during the COVID-19 Pandemic

NBIC Developed Multiple COVID-19 Products for DHS and External Stakeholders

NBIC incorporated COVID-19 related information into existing products and conducted some original analyses to support DHS management during the pandemic. According to NBIC officials, COVID-19 information was routinely incorporated into its daily Monitoring List, as well as other COVID-related analytical products that were distributed to DHS and other federal partners. In addition, NBIC reported that it produced several original analyses for DHS officials to support COVID-related planning and response efforts. NBIC also participated in two exercises with federal

⁵⁰NBIC sends PDF copies of all of its written products to Department of Defense, international, congressional, and private sector customers because these officials generally cannot access NBIC reports via the Homeland Security Information Network.

partners that served to inform pandemic-related response activities and lessons learned regarding interagency data sharing.

COVID-Related Analytical Products

According to NBIC, the center has produced over 2,000 COVID-related reports and information products since its initial reporting on the emerging disease in early January 2020. NBIC began tracking the novel coronavirus immediately and incorporated it into its daily Monitoring List, until it was removed in early June 2023.⁵¹ The extent of coverage in this product varied during the pandemic but it routinely included globally reported cases and mortalities, as well as a summary of the current status and recent developments. Within weeks of its initial reporting, NBIC also began producing a weekly COVID-19 report, which served as a standalone product that included expanded coverage of the disease, including more detailed case counts and mortalities across various global regions, and within individual countries and U.S. states. This product also began incorporating emerging information about disease characteristics and countermeasures, as well as related global impacts and response efforts, such as travel advisories.

According to NBIC officials, the center also developed the first of 71 Biosurveillance Event Reports on COVID-19 that further expanded on COVID-19 disease characteristics, related impacts, and response activities in the United States and around the globe. This product averaged about 40 pages of COVID-19 specific information, including a summary of related statistics (e.g., cases, hospitalizations, vaccinations, mortalities); variants of interest; related response efforts (e.g., travel restrictions, mask and vaccine mandates, medical countermeasures); and international summaries by region, among other information.⁵²

In addition, NBIC developed a recurring COVID-19 briefing slide that was broadly distributed to federal interagency partners. According to NBIC,

⁵¹NBIC added COVID-19 back to its Monitoring List on August 24, 2023 where it remained as of September 2023.

⁵²The October 2022 version we reviewed included over 180 total references. Examples of COVID-related information sources include CDC's COVID tracker and the HHS Protect database, the World Health Organization, and related publications from the CDC and U.S. Food and Drug Administration, as well as the New York Times and a wide range of foreign health agencies and international media reporting. According to NBIC officials, official government reporting is generally viewed as more authoritative when reporting on COVID-related statistics.

this product was initially produced on a daily basis for DHS officials but became a standing bi-weekly product that was distributed upon request to over 100 federal officials including those at the Pentagon, U.S. Northern Command, and the National Security Council.⁵³ This one-page product summarized COVID-cases and deaths globally and domestically, and included a short summary of recent developments.

According to NBIC officials, its COVID-related products were unique, in part, because they provided a timely summary of information for those without a public health background, especially early in the pandemic. For example, they noted they were able to begin reporting on the emerging coronavirus early in January 2020 when other federal agencies, including the CDC, were ramping up and organizing their response. In addition, officials reported that they see NBIC's role as synthesizing information by CDC and others in such a way that government and private sector officials, as well as operators and emergency responders, can easily understand and use it.

Several of NBIC's federal partners that we interviewed also noted that NBIC's products were particularly helpful during the early stages of the pandemic. As discussed previously, most of the officials we spoke to generally reported using NBIC products in combination with other sources, most notably the CDC for COVID-19 information. However, four of the 12 noted specifically that NBIC information supported their agencies' situational awareness or decision making during the pandemic. For example, officials from the VA and U.S. Geological Survey reported that NBIC provided helpful summary information early on when there was limited knowledge about the disease and the CDC was in the process of developing public guidance. A USDA official also noted that NBIC's products remained their primary source of information that they shared with others, including with agency leadership and members of an internal COVID-19 working group.

COVID-19 Support Activities and Analyses

In addition to its standing written products, NBIC also provided some support for COVID-related coordination and response activities within

⁵³U.S. Northern Command is one of DOD's eleven unified combatant commands, and its area of responsibility includes the United States, Canada, and Mexico. According to NBIC, as reporting from states, counties, and other countries slowed in 2022, NBIC decreased the frequency of distribution of the COVID-19 slide, and eventually replaced this product with a weekly Biological Event Slide in November 2022.

DHS, including several original analyses for DHS management and operational components. Specifically, NBIC reported that it assisted in the development of a survey—in coordination with DHS’ Chief Medical Officer, Office of the Chief Human Capital Officer, and the DHS Office of Operations Coordination. The purpose of the survey was to collect information from the DHS workforce regarding the impacts of COVID-19 and associated vaccination rates. In addition, NBIC reported several examples of information provided to DHS and federal partners regarding border health conditions and international flight patterns.

- Monitoring and analyses of cross-border health trends. NBIC reported that early in the pandemic, it worked with HHS to adapt the U.S. model to support analyses of potential COVID-related impacts to the Mexican and Canadian healthcare systems, such as projected hospitalization rates and ventilator needs. This work was conducted to provide DHS and DOD entities—U.S. Customs and Border Protection, U.S. Immigration and Customs Enforcement, and the U.S. Northern Command—with insights regarding the potential likelihood that citizens of these countries may attempt to cross the border to seek treatment. According to NBIC, it conducted a similar analysis of the Mexican health care system two additional times during the course of the pandemic using different modeling tools developed by federal partners.⁵⁴ NBIC noted that these COVID-related efforts were in addition to routine information that NBIC provides to U.S. Customs and Border Protection regarding health trend analyses at the southwest border, which includes updates on communicable diseases.
- Flight pattern analyses. According to officials, NBIC also conducted analyses of international air passenger flights, in collaboration with the CDC, to help identify possible disease movement pathways around the globe. According to NBIC, this information was provided to help support decision making regarding U.S. travel restrictions and enhanced airport passenger screening operations.

Pandemic-related Exercises and Information Sharing

In addition to developing COVID-19 related products and analyses, NBIC reported it participated in two exercises with federal partners that served to inform pandemic-related response activities and lessons learned

⁵⁴According to NBIC, it worked with the HHS Administration for Strategic Preparedness and Response and the Federal Emergency Management Agency to adapt U.S. models to Canada and Mexico using country specific infrastructure and demographic information.

regarding interagency data sharing. In August 2020, NBIC conducted a virtual tabletop exercise with VA to evaluate information sharing protocols and response capabilities based on experiences during the first seven months of the pandemic. The tabletop exercise identified the need to complete an ongoing Concept of Operations governing data sharing protocols between NBIC and VA. Among other findings, these agencies also identified the opportunity to better utilize VA data sets for syndromic surveillance. NBIC officials also reported that NBIC participated in DOD's Viral Supremacy exercise in 2020, which addressed preparedness and response capabilities for an influenza pandemic.

In April 2023, NBIC also participated in an interagency collaboration event with over a hundred subject matter experts from four federal departments: VA, DOD, HHS, and DHS. The purpose of the event was to build upon knowledge gained during the COVID-19 pandemic regarding interagency data sharing and communication. The event included presentations from each agency related to data standards and integration, as well as a roundtable discussion on a "Data Driven Approach to Future Threat Readiness." According to the executive summary of the event, lessons learned through the COVID pandemic include the need for expanded interagency data sharing, to potentially include a data sharing and communications portal between agencies. Planned follow on activities from the event include a tabletop exercise in fall 2023 to simulate interagency data sharing and communication procedures during a public health event.

Conclusions

Enhancing the federal government's ability to provide early warning and situational awareness regarding biological events is critically important in today's interconnected world. A catastrophic biological incident, such as an intentional bioterrorism attack or a naturally occurring pandemic, could emerge and spread quickly and cause significant casualties and economic consequences. NBIC serves an important function to consolidate data on global biological events from a broad spectrum of information sources inside and outside of government to inform decision-making and potential response activities. This is a complex undertaking that requires a combination of interagency collaboration, technological tools, and effective outreach with a range of different customers. NBIC has taken numerous steps to enhance data collection efforts and reinstate key stakeholder outreach activities in recent years. However, we identified some limitations to the performance measures contained in

NBIC's strategic planning documents. For example, several of the identified milestones in NBIC's March 2023 implementation plan are overly broad and it is unclear how NBIC would measure them to evaluate progress toward meeting its objectives. Further, the implementation plan does not identify associated time frames for any of the identified milestones or supporting actions. By ensuring that future strategic planning documents include more clearly defined performance measures and associated implementation time frames, NBIC could enhance its ability to assess program results and communicate this information to DHS management and federal stakeholders.

Recommendation for Executive Action

The Assistant Secretary for CWMD should ensure that NBIC's future strategic planning documents contain clearly defined performance measures with associated time frames so that they can be used to assess program results and communicate this information to management and stakeholders. (Recommendation 1)

Agency Comments and Our Evaluation

We provided a draft of this report for review and comment to DHS and the seven other departments we interviewed during this audit—the Departments of Agriculture, Defense, Health and Human Services, Interior, State, Transportation, and Veterans Affairs. DHS provided written comments which are included in appendix III.

In its comments, DHS concurred with our recommendation and described actions underway to develop a new 2024-2028 Strategy for Integrated Biosurveillance and an associated implementation plan. DHS plans to include clearly defined performance measures and associated time frames within these documents, which should address our recommendation. DHS also provided technical comments, which we incorporated, as appropriate. The other federal departments did not have any comments.

We are sending copies of this report to appropriate congressional committees, and the Departments of Agriculture, Defense, Health and Human Services, Homeland Security, Interior, State, Transportation, and Veterans Affairs. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report please contact me at (404) 679-1875 or curriec@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this product are listed in appendix IV.

A handwritten signature in black ink that reads "Chris P. Currie". The signature is written in a cursive, flowing style.

Chris P. Currie
Director, Homeland Security and Justice

Appendix I: Analysis of Select National Biosurveillance Integration Center (NBIC) Daily Monitoring List Products

NBIC Monitoring Lists Summarize New and Ongoing Biological Events

NBIC produces and distributes daily Monitoring List products by email. These Monitoring Lists are intended to provide stakeholders with brief summaries of new or ongoing acute biological events and to highlight recent developments and trends. According to NBIC officials, they produce different versions of the Monitoring List for five audiences: (1) federal officials; (2) members of Congress and their staff; (3) state, local, tribal, or territorial officials; (4) private sector stakeholders; and (5) international partners.¹

To better understand the type of information that NBIC shares with stakeholders and identify any changes NBIC made to its Monitoring Lists, we reviewed a non-generalizable selection of one congressional Monitoring List product from each week between September 2022 and March 2023, for a total of 31 products. We chose to review NBIC's Monitoring List because it is NBIC's most frequently issued product and was widely recognized by officials we interviewed among NBIC's federal partners.

In the sample we reviewed, NBIC reported on 14 total unique biological events, including global biological events, such as mpox, and more localized events, such as the 2022 Ebola outbreak in the Democratic Republic of the Congo. Of these 14 events, one—Highly Pathogenic Avian Influenza—primarily affected animals. Each of the individual Monitoring Lists we reviewed summarized three to seven unique

¹As discussed in our report, international distribution of NBIC's Monitoring Lists is currently limited to officials in Australia, Canada, New Zealand, and the United Kingdom.

biological events.² According to NBIC officials, they decide which biological events to include in NBIC's Monitoring List based on criteria such as how contagious a biological event is, if a biological event has spread to a new geographic area, or if there is substantial public interest in learning more about a biological event.

Each Monitoring List we reviewed begins with a 1-page summary of high priority biological event updates, as shown in Figure 4. These 1-page summaries highlight new information about the biological events that NBIC is tracking, such as changes in case counts or public health responses to these biological events, such as travel restrictions. In the body of each Monitoring List, NBIC provided additional details on each biological event along with a graphic, such as a map. NBIC attributed information to the appropriate sources, such as public health agencies or to news reports.³

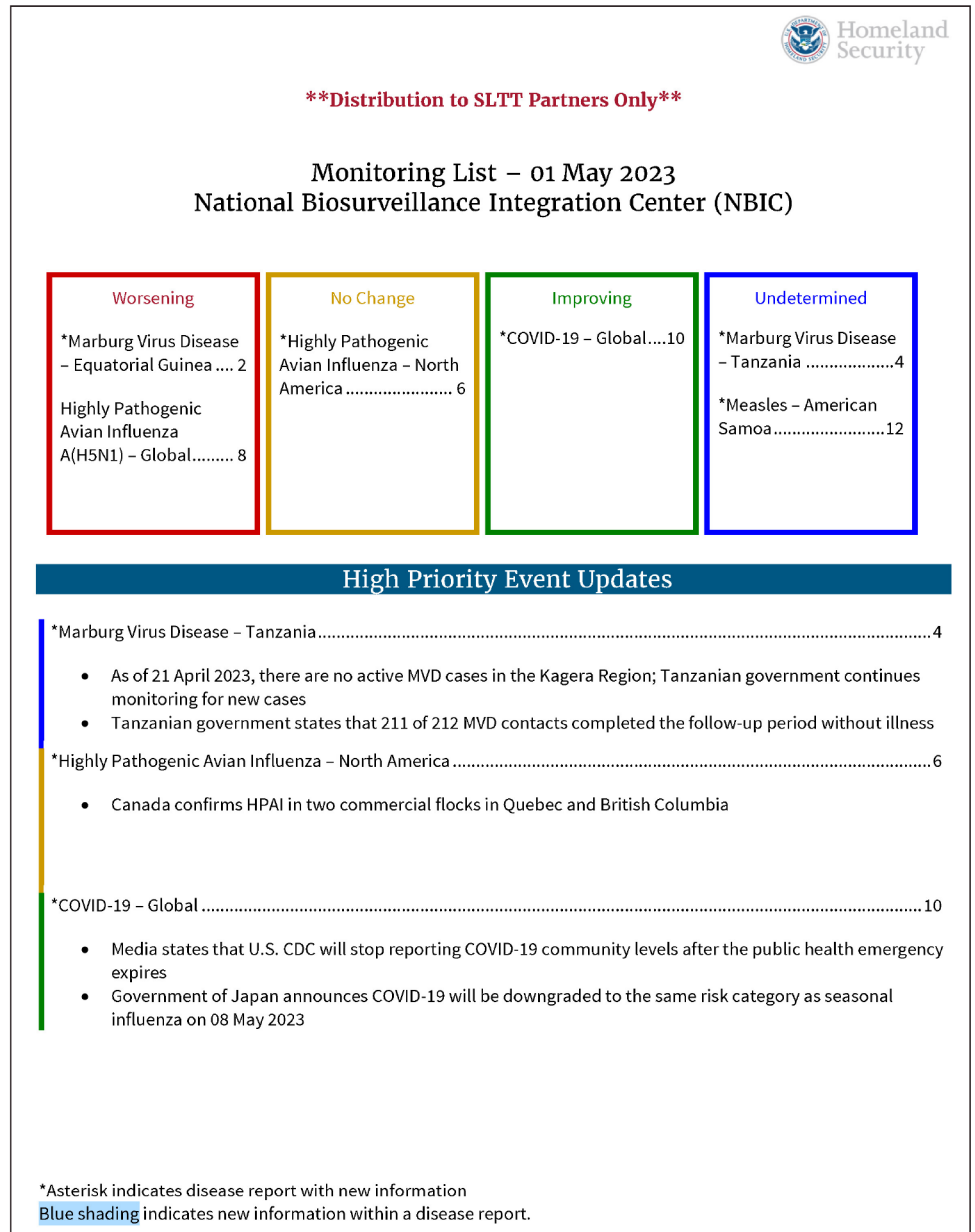
We identified two key structural and content changes made to the Monitoring Lists in winter 2022. Firstly, NBIC began allocating additional space to each individual biological event, with one page of text and another for illustrative figures, such as a map depicting the extent of a biological event's spread. Previously, NBIC allocated a single page for each biological event. According to NBIC officials, this change was made to improve readability. Secondly, NBIC took steps to better notify readers of its plans to remove biological events from the Monitoring List. NBIC began including specific dates for the removal of biological events from its Monitoring List, along with an explanation for the removal. NBIC might remove a biological event from the Monitoring list after public health officials determine that an event has ended or because NBIC observed a sustained drop in the number of cases, among other reasons.

²For the purposes of our analysis, a unique biological event refers to a new or ongoing incidence tracked by NBIC. It does not necessarily refer to a unique type of biological event.

³For example, NBIC's March 31, 2023 Monitoring List had 98 references.

Appendix I: Analysis of Select National Biosurveillance Integration Center (NBIC) Daily Monitoring List Products

Figure 4: Example of National Biosurveillance Integration Center Monitoring List Summary Page



Source: National Biosurveillance Integration Center. | GAO-24-106142

Appendix II: National Biosurveillance Integration Center (NBIC) 2023 Annual Federal Stakeholder Survey Questions

The following table includes information regarding questions administered to NBIC’s federal partners as part of its annual federal stakeholder survey in March 2023. According to NBIC, the center received survey responses from 46 agencies across 17 departments.

Table 3: National Biosurveillance Integration Center’s (NBIC) 2023 Annual Federal Stakeholder Survey Questions

Question topic	Question	Question type	Response option
Participant Information	How would you best describe your role (Select all that apply)?	Multiple Choice Free Response	- Decision Maker - Policy Official - Operator - Analyst - Other
Product Accessibility	How often do you read products?	Multiple Choice Free Response	- I do not receive NBIC products - Never - Daily - A few times weekly - A few times monthly or less - Other
Product Accessibility	Over the last year, what NBIC products have provided information that assisted you or your organization in making a decision, or solving a problem (Select all that apply)?	Multiple Choice Free Response	- Daily Monitoring List - Biosurveillance Event Report - Daily Biosurveillance Report - Spot Report - Interagency Monthly Biosurveillance Presentation Series - Daily Partners Call (10:30am) - Free Response - Other (e.g., Request for Information)

**Appendix II: National Biosurveillance
Integration Center (NBIC) 2023 Annual Federal
Stakeholder Survey Questions**

Question topic	Question	Question type	Response option
Product Impact	In the last year, has information from a NBIC product been used in a formal or informal briefing/report to your leadership, stakeholders, or customers?	Multiple Choice Free Response	- Yes - No - I am not sure or I don't know If YES, please specify.
Participant Needs	Please choose the top three (3) categories of information that would best help your organization make decisions. (Limited to 3 choices)	Multiple Choice Free Response	- Geographic location and scope of an identified bio-threat or event - Temporal scope and timeline of an identified bio-threat or event - Control, containment & countermeasure information (to include description(s), cost, availability, and timelines) - Agent characteristics (to include transition routes, morbidity/mortality case counts, - Socio-economic indicators (to include information on demographics affected, high risk populations, social disruption, and economic impact) - Infrastructure impact indicators (to include sector(s) of infrastructure negatively impacted by event) - Interagency actions (Operational posture of county, state, federal, and global agencies and those in private sector) - Analysis of potential impact (to include health (human & animal), agriculture, environmental) - Other (Please specify)
Product Quality	Has an NBIC product ever been the first place you have heard about an emerging biological event?	Multiple Choice Free Response	- Yes - No - If Yes (which product, which event)
Product Quality	I find NBIC products and services to be accurate (Information is correct and reliable)	Multiple Choice	- Strongly Agree - Agree - Neither agree nor disagree - Disagree - Strongly Disagree
Product Quality	I find NBIC products and services to be timely (Received in time to make a decision or incorporate into a product)	Multiple Choice	- Strongly Agree - Agree - Neither agree nor disagree - Disagree - Strongly Disagree

**Appendix II: National Biosurveillance
Integration Center (NBIC) 2023 Annual Federal
Stakeholder Survey Questions**

Question topic	Question	Question type	Response option
Product Quality	NBIC products and services are unique (Contains information that I am not seeing elsewhere)	Multiple Choice	- Strongly Agree - Agree - Neither agree nor disagree - Disagree - Strongly Disagree
Product Quality	I find NBIC products and services to be useful (Information is utilized within my organization)	Multiple Choice	- Strongly Agree - Agree - Neither agree nor disagree - Disagree - Strongly Disagree
Product Quality	If you selected 'Disagree' or 'Strongly Disagree' for any of the questions (9-12) on the accuracy, timeliness, uniqueness and usefulness of the NBIC products, please describe how we can improve our products and services to better support your agency.	Free Response	Open-ended Response
Participant Needs	Please help us determine which products and services are most important to you by ranking the product(s) in the order of their usefulness to you or your agency. Rank from 1 (Most Important) to 6 (Least Important).	Ranking Order	- Daily Monitoring List - Biosurveillance Event Report - Daily Biosurveillance Review - Spot Report - Interagency Monthly Biosurveillance Presentation Series - Daily Partners Call (10:30am)
Participant Needs	Which of the following is most important to you:	Multiple Choice Free Response	- Daily, high level informational products - Less frequent products which contain more in-depth analyst and context - Other options (please specify)
Product Quality	Does the quality of NBIC products encourage you to suggest that others sign-up for the NBIC distribution list?	Multiple Choice Free Response	- Yes - No - If YES, which product(s)?
Product Quality	Have you experienced any technical issues (e.g., spam filter, graphics not displaying correctly) with receiving any of NBIC's products?	Multiple Choice Free Response	- Yes - No - If YES, what we would you need us to do better to solve the problem?
Product Quality	Please provide additional insight or what you would like to see incorporated to improve NBIC's products for you.	Free Response	- Open-ended Response

Source: GAO analysis of National Biosurveillance Integration Center survey data. | GAO-24-106142.

Appendix III: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528



**Homeland
Security**

November 13, 2023

Chris Currie
Director, Homeland Security and Justice Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548-0001

Re: Management Response to Draft Report GAO-24-106142, "BIODEFENSE: National Biosurveillance Integration Center Has Taken Steps to Address Challenges, but Could Better Assess Results"

Dear Mr. Currie,

Thank you for the opportunity to comment on this draft report. The U.S. Department of Homeland Security (DHS or the Department) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

DHS leadership is pleased to note GAO's positive recognition of the National Biosurveillance Integration Center's (NBIC) efforts to address challenges and establish opportunities in accessing needed data, obtaining adequate personnel, addressing new technologies, and strengthening interagency and external relationships. In addition, GAO noted that stakeholders find NBIC's products helpful to informing their situational awareness of global biological events, such as the COVID-19 pandemic. DHS remains committed to analyzing and sharing key information about developing bio threats to ensure U.S. responses are well-informed, minimize economic impact, and save lives.

The draft report contained one recommendation with which the Department concurs. Enclosed find our detailed response to the recommendation. DHS previously submitted technical comments addressing several accuracy, contextual, and other issues under a separate cover for GAO's consideration.

Again, thank you for the opportunity to review and comment on this draft report. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.

Sincerely,

JIM H CRUMPACKER Digitally signed by JIM H CRUMPACKER
Date: 2023.11.13 15:49:54 -05'00'

Jim H. Crumpacker, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

Enclosure

**Enclosure: Management Response to Recommendation
Contained in GAO-24-106142**

GAO recommended that the Assistant Secretary for Countering Weapons of Mass Destruction (CWMD):

Recommendation 1: Ensure that NBIC's future strategic planning documents contain clearly defined performance measures with associated timeframes so that they can be used to assess program results and communicate this information to management and stakeholders.

Response: Concur. NBIC is developing a new 2024-2028 Strategy for Integrated Biosurveillance and an associated implementation plan. As part of this process, NBIC will ensure that performance measures are clearly defined for each milestone with clearly associated, specific timeframes for completion of activities. Estimated Completion Date: June 28, 2024.

Accessible text for Appendix III: Comments from the Department of Homeland Security

**U.S. Department of Homeland Security
Washington, DC 20528**

November 13, 2023

Chris Currie
Director, Homeland Security and Justice Issues
U.S. Government Accountability Office 441 G Street, NW
Washington, DC 20548-0001

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Appendix IV: GAO Contacts and Staff Acknowledgments

GAO Contact

Chris Currie at (404) 679-1875 or CurrieC@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Sonja S. Ware (Assistant Director), Ryan Lambert (Analyst-in-Charge), Joshua Bolanos-Cruz, Benjamin Crossley, Pete Haderlein, Tracey King, Amber Sinclair, and Adam Vogt made key contributions to this report.

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