



INSTITUTE FOR DEFENSE ANALYSES

Analysis of NATO Doctrine for Biosurveillance

Carl A. Curling, Project Leader
Michael S. Finnin

October 2015

Approved for public release;
distribution is unlimited.

IDA Document D-5224

Log: H 15-000969

INSTITUTE FOR DEFENSE ANALYSES
4850 Mark Center Drive
Alexandria, Virginia 22311-1882



The Institute for Defense Analyses is a non-profit corporation that operates three federally funded research and development centers to provide objective analyses of national security issues, particularly those requiring scientific and technical expertise, and conduct related research on other national challenges.

About This Publication

The work was conducted by the Institute for Defense Analyses (IDA) under contract HQ0034-14-D-0001, Project CA-6-3079, "CBRN Casualty Estimation and Support to the Medical CBRN Defense Planning & Response Project," for the Joint Staff, Joint Requirements Office (JRO) for Chemical, Biological, Radiological and Nuclear (CBRN) Defense (J-8/JRO) and the U.S. Army Office of The Surgeon General (OTSG). The views, opinions, and findings should not be construed as representing the official position of either the Department of Defense or the sponsoring organization.

Acknowledgments

The authors would like to thank Dr. Katherine M. Sixt for her help in developing this analysis. We are also grateful to Mr. Douglas P. Schultz and Mr. Mark E. Tillman for reviewing, Ms. Florestine Purnell for editing, and Ms. Amberlee Mabe-Stanberry for producing this document.

Copyright Notice

© 2015 Institute for Defense Analyses, 4850 Mark Center Drive, Alexandria, Virginia 22311-1882 • (703) 845-2000.

This material may be reproduced by or for the U.S. Government pursuant to the copyright license under the clause at DFARS 252.227-7013 (a)(16) [Jun 2013].

INSTITUTE FOR DEFENSE ANALYSES

IDA Document D-5224

**Analysis of NATO Doctrine for
Biosurveillance**

Carl A. Curling, Project Leader
Michael S. Finnin

This page is intentionally blank.

Executive Summary

IDA Research Method and Assumptions

The United States is developing an “all-of-Nation” approach to a biosurveillance enterprise that will allow the US to quickly detect an incident of national significance that affects human, animal, or plant health. The White House has issued a “National Strategy for Biosurveillance” to guide this initiative. While no formal all-of-government biosurveillance implementation doctrine exists, the Department of Defense (DOD) already contributes to this notional enterprise with existing capabilities that are distributed across the department. The Institute for Defense Analyses (IDA) was asked to report on the feasibility of the application of NATO doctrine to the development and implementation of biosurveillance concepts and doctrine. Additionally, the sponsor asked whether U.S. biosurveillance practices can continue to be implemented while engaged in NATO joint operations. IDA’s initial approach to answer this question was to gather DOD and NATO biosurveillance doctrine and compare the two concepts to determine if NATO policies can be applied to the DOD concept. An initial search revealed that neither NATO nor DOD had formal doctrine on biosurveillance. Therefore, NATO biosurveillance doctrine could not contribute to a developing DOD biosurveillance doctrine. IDA then proposed to identify and outline biosurveillance-like capabilities of DOD and NATO and compare these activities.

A search of the literature revealed a study by the RAND Corporation Arroyo Center¹ which attempted to list the DOD biosurveillance-relevant systems and assets, the policy and doctrine that supported those assets, and the funding mechanisms for the assets within the developing DOD biosurveillance enterprise. Details of the DOD biosurveillance capabilities can be found in that document. IDA reasoned that this study would provide a reasonable assumption of what the eventual DOD biosurveillance implementation would be and leveraged the findings to compare with NATO doctrine. IDA also referenced appropriate DOD and NATO doctrine to support the comparison.

DOD and NATO Biosurveillance Capabilities

Even though DOD and NATO lack a formal doctrine describing biosurveillance missions, capabilities, and assets, it is clear that they do currently carry out missions and have capabilities that would fit into an eventual biosurveillance strategy and

¹ Moore M, Fisher G, & Stevens C. “Toward Integrated DOD Biosurveillance” (RR399A) RAND Corporation, Washington, DC, 2013.

implementation plan. Table 1 compares the current capabilities between DOD and NATO that would have relevance to a biosurveillance mission and demonstrates that similar capabilities exist in both organizations. Many of these capabilities are well-defined in both organizations and perform similar activities such as medical intelligence, deployment health, environmental detection and identification, and occupational and environmental surveillance. On the other hand, DOD has specific definitions for comprehensive, health and medical surveillance, whereas NATO does not have clear definitions in its doctrine for health and disease surveillance. Therefore, it is difficult to compare these capabilities between DOD and NATO.

DOD and NATO Biosurveillance-like Capabilities

Department of Defense	NATO
Deployment Health Activities	Deployment Health Surveillance
Comprehensive Health Surveillance	
Health Surveillance	Health and Disease Surveillance
Medical Surveillance	
Occupational & Environmental Health Surveillance	Occupational, Environmental, and Industrial Health Hazards
Medical Intelligence	Medical Intelligence
Environmental Detection & Identification	Environmental Detection & Identification

Conclusions

The capabilities that exist both in NATO and DOD could certainly form a starting point for a biosurveillance doctrine in DOD. They each have qualities that resonate with the U.S. strategy for biosurveillance, which takes an approach of collecting, integrating, analyzing, and communicating all-hazards and disease activity to allow better decision making. However, for DOD and NATO to have clear and interoperable biosurveillance doctrine, specific action must be taken. IDA’s conclusions and recommended actions are:

1. NATO biosurveillance doctrine cannot be feasibly applied to the development and implementation of DOD biosurveillance doctrine because neither organization has formal biosurveillance doctrine.
2. DOD must develop and clarify a biosurveillance doctrine.
3. NATO must develop and clarify a biosurveillance doctrine.

4. Both DOD and NATO must ensure that biosurveillance capabilities and information in each organization can be interoperable.
5. Sharing DOD biosurveillance data across the U.S. Government and with NATO partners should be possible.

This page is intentionally blank.

Contents

1.	Background.....	1
	A. U.S. Biosurveillance Definition and Expected Outcomes	1
	1. Developing National Biosurveillance Concept	1
2.	DOD Biosurveillance Concept.....	3
	A. Responsibility of DOD in Developing National Biosurveillance Concept.....	3
	B. DOD Missions Requiring Biosurveillance.....	4
	1. Force Health Protection.....	5
	2. Biological Weapons Defense	5
	3. Medical Intelligence	6
	4. Global Health Surveillance	6
	C. Actors in the Current and a Potential Future DOD Biosurveillance Enterprise.....	7
3.	NATO Biosurveillance Concept.....	11
	A. NATO Biosurveillance Definition	11
	B. NATO missions Requiring Biosurveillance.....	11
	1. Force Health Protection.....	11
	2. Biological Weapons Defense	13
	3. Global Health Surveillance	13
	C. Actors in NATO Biosurveillance Enterprise.....	14
	1. Member Nations and their Forces	14
	2. NATO Centre for Excellence for Military Medicine (MILMED COE)	14
	3. Allied Command Operations (ACO) Medical Branch.....	14
4.	Comparing Potential DOD and NATO Biosurveillance Activities.....	15
	A. NATO and DOD Capabilities	15
	B. How do potential NATO biosurveillance capabilities relate to biosurveillance mission outcomes?	17
5.	Conclusions	19
	Appendix A Illustrations.....	A-1
	Appendix B References	B-1
	Appendix C Abbreviations	C-1

This page is intentionally blank.

1. Background

A. U.S. Biosurveillance Definition and Expected Outcomes

1. Developing National Biosurveillance Concept

The White House issued in July 2012 the National Strategy for Biosurveillance,² which outlines the administration's plan for an "all-of-Nation" approach to develop a national biosurveillance enterprise. Biosurveillance capabilities already exist in many governmental departments, including the Department of Defense (DOD), and the Strategy seeks to harness these capabilities to achieve the goal of a well-integrated national biosurveillance enterprise.

The Strategy defines biosurveillance as:

"the process of gathering, integrating, interpreting, and communicating essential information related to all-hazards threats or disease activity affecting human, animal, or plant health to achieve early detection and warning, contribute to the overall situational awareness of the health aspects of the incident, and to enable better decision making at all levels."

This definition does not apply to only the United States in isolation. A national biosurveillance enterprise should have an eye to a global capability, which monitors transnational health threats and can eventually integrate and encourage the development of biosurveillance capabilities in other countries.

The basis of the Strategy³ are four core functions that enable the enterprise to inform decision-making processes of the U.S. government. They are:

1. Scan and discern the environment
2. Identify and integrate essential information
3. Alert and inform decision makers
4. Forecast and advise impacts

Essentially, the core functions represent a biosurveillance enterprise that collects all relevant information (plant, animal, and human) from multiple sources and shares that information across the enterprise and with decision makers. A forecasting capability also allows the enterprise to predict impacts, giving further valuable information to decision makers.

² White House, *National Strategy for Biosurveillance*, July 2012.

³ Ibid.

Implementation of the Strategy has not been clear, however. The White House was due to release an implementation plan four months after the release of the Strategy. As of this writing, it has not been available to IDA. However, the Executive Office of the President, Office of Science and Technology Policy has released a National Biosurveillance Science and Technology Roadmap⁴ to support the Strategy and the implementation plan. DOD entities participated in the development of the roadmap, including the Joint Program Executive Office for Chemical and Biological Defense; the Defense Threat Reduction Agency - Joint Science and Technology Office (DTRA JSTO); the Armed Forces Health Surveillance Center (AFHSC); the Office for the Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs; and the Office for the Assistant Secretary of Defense for Health Affairs. The roadmap lists current research and development projects applicable to the biosurveillance mission and outlines an agency-agnostic list of research priorities.

⁴ Executive Office of the President, Office of Science and Technology Policy, *National Biosurveillance Science and Technology Roadmap*, June 2013.

2. DOD Biosurveillance Concept

A. DOD Responsibility in Developing a National Biosurveillance Concept

In support of the White House National Strategy, the Deputy Secretary of Defense issued an Interim Guidance Memo in June, 2013⁵ to direct the DOD to publish strategic guidance for DOD implementation of the Strategy. The Memo also directs DOD offices to develop a directive for biosurveillance for approval by the Secretary of Defense within twelve months. IDA has been unable to obtain documentation from DOD outlining its implementation of the Strategy for use in this study. It is likely that there has been a delay in developing guidance and the aforementioned directive.

Other than the Interim Guidance Memo, DOD has no doctrine specifically outlining a biosurveillance mission, outcomes, or specific assets. However, DOD does define related capabilities that would impinge on an eventual biosurveillance doctrine. DOD defines six biosurveillance-related health and environmental surveillance capabilities that have a disease threat surveillance component and directs appropriate DOD entities to implement these surveillance missions to keep a fit and ready force. These capabilities contain many aspects of the National Strategy, including:

1. **Comprehensive Health Surveillance**—Health surveillance conducted throughout Service members’ military careers and DOD civilian employees’ employment, across all duty locations, and encompassing risk, intervention, and outcome data. Such surveillance is essential to the evaluation, planning, and implementation of public health practice and prevention and must be closely integrated with the timely dissemination of information to those who can act upon it.
2. **Health Surveillance**⁶—The regular or repeated collection, analysis, and interpretation of health-related data and the dissemination of information to monitor the health of a population and to identify potential risks to health, thereby enabling timely interventions to prevent, treat, or control disease and injury. It includes occupational and environmental health surveillance and medical surveillance.
3. **Medical Surveillance**—The ongoing, systematic collection, analysis, and interpretation of data derived from instances of medical care or medical

⁵ Office of the Secretary of Defense, Memorandum: Interim Guidance for Implementing the National Strategy for Biosurveillance, June 13, 2013.

⁶ DOD Directive, “Comprehensive Health Surveillance,” DoDD 6490.02E, February 8, 2012, p. 11.

evaluation, and the reporting of population-based information for characterizing and countering threats to a population's health, well-being, and performance

4. **Occupational and Environmental Health Surveillance (OEH)**—The regular or repeated collection, analysis, archiving, interpretation, and dissemination of occupational and environmental health-related data for monitoring the health of, or potential health hazard impact on, a population and individual personnel, and for intervening in a timely manner to prevent, treat, or control the occurrence of disease or injury when necessary.
5. **Deployment Health Activities**—The regular collection, analysis, archiving, interpretation, and distribution of health-related data used for monitoring the health of individuals or a deployed population, and for intervening in a timely manner to prevent, treat, or control the occurrence of disease or injury. It includes OEH and medical surveillance subcomponents.⁷
6. **Medical Intelligence**⁸—The product of collection, evaluation, and all-source analysis of worldwide health threats and issues, including foreign medical capabilities, infectious disease, environmental health risks, developments in biotechnology and biomedical subjects of national and military importance, and support force protection.

The above capabilities echo the ideas outlined in the National Biosurveillance Strategy in that they involve the collection, analysis, interpretation, and appropriate communication of health and disease data in DOD, civilian, and military populations. Such information is required for commanders to have a health and medical situational awareness to allow them to make appropriate decisions in DOD missions. The medical intelligence capability, in particular, is a unique asset in the US government that is resident in the DOD to allow it to support a biosurveillance forecasting mission by evaluation of health and disease intelligence data to develop a disease threat assessment. The disease threat assessment allows commanders to make appropriate decisions as well.

B. DOD Missions Requiring Biosurveillance

RAND reviewed DOD documents provided by the AFHSC and concluded that the majority of DOD missions that required biosurveillance can be grouped into three main categories:

⁷ DOD Instruction, "Deployment Health," DoDI 6490.03, September 30, 2011, p. 18.

⁸ DOD Instruction, "National Center for Medical Intelligence (NCMI)," DoDI 6420.01, March 20, 2009, p. 1.

1. Force Protection
2. Biological Weapons Defense
3. Global Health Surveillance

The desired outcomes of these missions for DOD have also been proposed and they follow closely to the core functions outlined in the National Strategy (see Section 1A). RAND re-interpreted the Strategy functions to align more closely with DOD functions, missions and outcomes. They are:

1. Early warning of threats and early detection of events
2. Overall situational awareness
3. Better decision-making at all levels
4. Forecast of impacts

1. Force Health Protection

DOD doctrine and statutory language clearly enables and directs DOD to perform the force protection and the biological weapons defense missions. In particular, biosurveillance would support Force Health Protection (FHP), which complements the full-dimensional Force Protection mission. FHP is:

“All measures taken by commanders, supervisors, individual Service members, and the Military Health System to promote, protect, improve, conserve, and restore mental and physical well-being of Service members across the range of military activities and operations.”⁹

The above-defined DOD surveillance and intelligence functions of a future biosurveillance capability would certainly support the FHP mission since surveillance would provide information to protect forces from all disease threats.

2. Biological Weapons Defense

The DOD biological defense mission falls under the DOD’s Strategy for countering weapons of mass destruction (WMD).¹⁰ This Strategy describes DOD tasks and supporting capabilities needed to counter WMD. The tasks include:

a. Understand the Environment, Threats, and Vulnerabilities

This activity for countering WMD can be likened to the first two outcomes of a purported DOD biosurveillance capability, namely early warning and detection and

⁹ DOD Directive, “Force Health Protection (FHP),” DoDD 6200.04, October 9, 2004, p.10.

¹⁰ DOD Strategy for Countering Weapons of Mass Destruction, June, 2014.

situational awareness. DOD capabilities in disease surveillance and Biological Warfare Agent (BWA) detection and diagnostics are needed to support this activity.

b. Control, Defeat, Disable, and/or Dispose of WMD Threats

c. Safeguard the Force and Manage Consequences

Supporting FHP by disease surveillance is an important capability for this activity. Better decision-making and forecasting impacts biosurveillance outcomes would mesh well with this activity.

DOD biosurveillance capabilities support WMD defense tasks (a) and (c) by allowing DOD to have an early warning, situational awareness, and forecasting capability of disease threats from biological agents.

3. Medical Intelligence

Part of FHP and biological weapons defense is the preparation of a health threat assessment that is based upon operational and medical intelligence.¹¹ The health threat assessment is developed from health and disease surveillance data obtained through DOD biosurveillance-like capabilities described in Section 2A. The analysis of medical intelligence and surveillance data is also of interest to the biological weapons defense mission as the threat assessment can also inform commanders of the likelihood of disease in both civilian and military populations being the result of a natural outbreak or the use of a biological weapon. It may be that the first indication of the use of a biological weapon is the signs of disease in these populations.

4. Global Health Surveillance

There is little statute and some national doctrine to support DOD's global health surveillance mission. DOD is directed to support this mission through various national policy documents such as Presidential Policy Directive (PPD) National Science and Technology Council (NSTC)-7 which allowed DOD to expand its role in a U.S. Government-wide, global emerging infectious disease agenda. DOD had unique assets in its overseas infectious disease laboratories and PDD-NSTC-7 directed DOD to support the U.S. Government global emerging infectious disease mission with those assets. The global health surveillance mission arguably is important to support the force protection and biological weapon defense missions since US forces operate in most parts of the world at any given time and global infectious disease can be a significant threat to those forces. Based on this lack of statutory authority, RAND concluded that both FHP and biological

¹¹ DOD Directive, "Force Health Protection (FHP)," DoDD 6200.04, October 9, 2004, p.5.

weapons defense are the most important biosurveillance-related missions, followed by the third critically important mission, global health surveillance.

The FHP, biological weapons defense, and global health surveillance biosurveillance missions and outcomes are already being executed by capabilities and organizations spread across the DOD and are highlighted in Section 2C.

C. Actors in the Current and a Potential Future DOD Biosurveillance Enterprise

The biosurveillance missions, programs and responsibilities are spread across multiple DOD entities with different lines of authority and not explicitly collected under a biosurveillance enterprise or authority. There are four main actors in the current biosurveillance or disease surveillance efforts:

1. The Military Services and Combatant Commands (CCMD)
2. The Armed Forces Health Surveillance Center (AFHSC), which receives direction from the Deputy Assistant Secretary of Defense for Force Health Protection and Readiness (DASD(FHP&R)) under the Assistant to the Secretary of Defense for Health Affairs (ASD(HA))
3. Assistant to the Secretary of Defense for Nuclear, Chemical and Biological Defense (ASD(NCB))
4. National Center for Medical Intelligence (NCMI), under the Defense Intelligence Agency

The above actors have roles in all three potential biosurveillance missions. The Services and CCMD train, equip, and support the force to carry out force health protection^{12,13} and biological weapon defense missions. They carry out the operational-level missions of deployment, medical, health, occupational and environmental surveillance, and FHP in keeping a fit and medically ready force. The ASD(HA) is responsible for overall comprehensive health surveillance, while the AFHSC works with the Services in the FHP mission through its health surveillance capabilities. AFHSC is responsible for DOD-level strategic health surveillance. It compiles, maintains archives, analyzes, and reports actionable health surveillance information to the DOD. AFHSC maintains several capabilities and databases of health surveillance data including the Electronic Surveillance System for Early Notification of Community-based Epidemics

¹² Ibid., pp 5-6.

¹³ DOD Directive, "Comprehensive Health Surveillance," DoDD 6490.02E, February 8, 2012, p. 6-7.

(ESSENCE), which AFHSC maintains to detect health anomalies in DOD populations, as well as the Global Emerging Infections Surveillance and Response System (GEIS).

The ASD(NCB) carries out the research, development, and acquisition portions of the biological weapons defense mission through the Defense Threat Reduction Agency (DTRA) and the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) the Joint Requirements Office for NBC defense, and the Services.¹⁴

The global health surveillance mission of DOD is supported by the AFHSC GEIS Division through its global surveillance activities. DTRA also has a role in global surveillance through its Cooperative Biological Engagement Program (CBEP), which is responsible for building surveillance capabilities in host nations. Finally, the NCMI supports all three missions through its medical intelligence capability by assessing the medical and biological weapons capabilities of international groups.¹⁵ NCMI can provide an early warning capability through its intelligence mission.

DOD is currently coordinating the efforts of the various components of the enterprise. The Joint Staff, J8 Force Structure, Resources and Assessment Directorate and the Joint Requirements Office for Chemical, Biological, Radiological and Nuclear Defense (JRO-CBRND) conducted a Joint Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy Change Request (JDCR) to document and implement non-materiel actions to improve the current DOD biosurveillance capability.¹⁶ During the JCDR, it was suggested that the AFHSC would be an appropriate lead to coordinate the needs of an integrated biosurveillance capability. To this end, AFHSC stood up a division of Integrated Biosurveillance (IB) in 2012 in coordination with OASD(HA) to help coordinate and integrate the biosurveillance efforts in DOD. The resultant Joint Requirements Oversight Council (JROC) Memo outlining change for biosurveillance describes two main functions of DOD biosurveillance capability, namely:

1. Rapid detection, identification, analysis (including characterization), and impact assessment related to diagnosis of disease or pathogens or to health hazards.
2. Timely reporting and early warning of results and related information to those responsible for decisions and actions.

¹⁴ DOD Directive, "Roles and Responsibilities Associated with the Chemical and Biological Defense (CBD) Program (CBDP)," DoDD5160.05E, October 9, 2008.

¹⁵ DOD Instruction, "National Center for Medical Intelligence (NCMI)," DoDI 6420.01, March 20, 2009, p. 1.

¹⁶ AFHSC 2013/2014 Annual Report, http://www.afhsc.mil/documents/pubs/documents/AFHSC_AnnualReport_WEB.pdf, accessed May 8, 2015.

These functions dove-tail with the core functions outlined in the Strategy.

Despite these integration efforts, the DOD biosurveillance enterprise still appears to be a work in progress in terms of coordination, integration, CONOPS, and lines of authority. The biosurveillance capabilities exist across DOD and efforts are being made to coordinate those efforts. However, overarching directives and formal implementation plans are still lacking.

This page is intentionally blank.

3. NATO Biosurveillance Concept

A. NATO Biosurveillance Definition

Like DOD, NATO does not yet have a formal biosurveillance concept, but it does have missions, needs, and capabilities similar to those in DOD. For example, NATO conducts health surveillance of member-state forces as well as global surveillance for force health protection. With the U.S. National Strategy for Biosurveillance, it appears that the United States is ahead of NATO in developing a biosurveillance concept. Therefore, for this study, NATO missions (FHP, Biological Weapons Defense and Global Health Surveillance), actors, and capabilities are mapped onto the developing US biosurveillance concept.

B. NATO Missions Requiring Biosurveillance

1. Force Health Protection

NATO doctrine defines Force Protection (FP) as:

“Measures and means to minimize the vulnerability of personnel, facilities, materiel, operations and activities from threats and hazards in order to preserve freedom of action and operational effectiveness thereby contributing to mission success.”

Force Health Protection is a subset of FP and is:

“actions taken to counter the effects of the environment, occupational health risks, and disease through preventative and reactive measures.”¹⁷

FHP has six capabilities to enable its goals:¹⁸

1. Health and disease surveillance
2. Preventive medicine and disease control
3. Occupational, environmental, and industrial health hazards
4. Chemical, Biological, Radiological and Nuclear (CBRN) Health Threats
5. Field sanitation, food and water hygiene, and veterinary services in the context of food and water borne diseases
6. Health promotion and health readiness

¹⁷ NATO Allied Joint Doctrine for Force Protection, AJP-3.14, November 2007.

¹⁸ NATO Allied Joint Medical Force Health Protection Doctrine, AJMedP-4, 30, May 2011.

Of these capabilities – health and disease surveillance, CBRN health threats, surveillance of food and water borne disease, and veterinary services – would have the most bearing on biosurveillance missions. Deployment health and disease surveillance, as well as food and water borne diseases, will be discussed here and biological weapons threats will be discussed in the next section.

NATO deployment health surveillance is a fundamental component of the FHP concept that is necessary to obtain a clear picture of force health status and allow NATO to respond appropriately.¹⁹ NATO defines deployment health surveillance as:

‘.the continuous, systematic collection, analysis, interpretation, and dissemination of health-related data with respect to deployed NATO forces.’

In addition to health surveillance, safe food and water supplies as well as veterinary services are required to minimize risk of disease from the environment surrounding deployed NATO forces. Many endemic diseases, as well as possible emerging infectious diseases, can circulate in animal hosts, which could potentially impact the health of NATO forces. NATO documentation is not specifically clear in procedures for monitoring these environmental and endemic threats, however²⁰. Presumably, methodologies for monitoring biological pathogens in the environment would be required. Section 3B2 outlines environmental detection for biological weapons defense and it is likely that a similar capability for endemic and emerging diseases would be necessary for deployed NATO forces.

NATO doctrine AJMedP-4 also identifies medical intelligence (MEDINT) as a key enabler of FHP. MEDINT consists of assessments of environmental and health risks, medical capabilities and capacities in areas of interest, and the development of medical threat assessment for NATO forces.²¹ MEDINT provides information for the development of a preventative medicine agenda for the planning of appropriate FHP measures. Both FHP and MEDINT are intertwined disciplines that inform each other.

¹⁹ NATO Deployment Health Surveillance, Edition 1, Version 1, Ratification Draft.

²⁰ NATO Allied Joint Medical Force Health Protection Doctrine, AJMedP-4, 30 May 2011, pp 4-6, 4-7.

²¹ NATO Allied Joint Medical Doctrine for Medical Intelligence AJMedP-3, November 2008.

2. Biological Weapons Defense

CBRN and medical defense doctrine already have capabilities that would overlap with a potential biosurveillance capability:

1. **Environmental Detection and Identification** – Environmental detection of biological agents involves the discovery of such agents through devices or observation of living organisms.²²
2. **Deployment Health Surveillance** – As described in Section 3B1 for FHP, deployment health surveillance is important for the CBRN defense mission because the first indication that a biological weapon was deployed against NATO forces would be disease symptoms either in deployed NATO forces or in the indigenous population²³.
3. **Medical Intelligence Surveillance** – MEDINT maintains continuous awareness of local civilian disease trends in order to detect public health threats that may be linked to biological agent casualties. These events may first occur in local civilian populations and may have an effect on NATO force medical readiness.²⁴
4. **Health and Biological Agent Surveillance Assessments** – FHP has a significant role in biological weapons defense in that, along with MEDINT, it provides a health risk assessment not only for endemic diseases but for biological agents as well to inform the preventive medicine agenda, biological weapon casualty estimation, and protective measures against such agents.²⁵

3. Global Health Surveillance

It is not clear if NATO has a global health surveillance mission. A survey of NATO documentation does not reveal any specific direction for this kind of mission. NATO does contribute, however, by publishing global surveillance products. Presumably, like DOD, NATO interprets global health surveillance as an important part of FHP and biological weapons defense.

²² NATO Allied Joint Doctrine for Chemical, Biological, Radiological, and Nuclear Defence AJP-3.8(A), p3-2.

²³ Allied Joint Medical Doctrine for Support to Chemical, Biological, Radiological, and Nuclear (CBRN) Defensive Operations, AJMedP-7, p3-3.

²⁴ Ibid.

²⁵ Ibid., p4-1-4-5.

C. Actors in NATO Biosurveillance Enterprise

1. Member Nations and their Forces

NATO deployment health facilities are required to report health surveillance data into NATO deployment health surveillance systems (currently, EpiNATO). Such data is then transmitted to the NATO Operational Chain of Command (CoC). Ultimately, the NATO Strategic CoC is responsible for implementation and management and the consumer of deployment health surveillance data and analysis. Member nations are also required to provide safe food and water supplies for troops, as well as veterinary services, to assure that no disease can be transferred from animals to humans.

2. NATO Centre for Excellence for Military Medicine (MILMED COE)

The Deployment Health Surveillance Capability (DHSC), as part of the MILMED COE, is responsible for building a comprehensive health surveillance capability for NATO. Its mission is to contribute to the military medical services in NATO to achieve health surveillance and enhance force health protection of deployed NATO forces. DHSC is responsible for:

1. leading the revision of NATO doctrine on deployment health surveillance,
2. modernization and improvement of EpiNATO,
3. development of new tools for deployment health surveillance, and
4. collecting and analyzing health surveillance data for customers (NATO Strategic CoC, National Points-of-Contact, etc.).

3. Allied Command Operations (ACO) Medical Branch

The ACO Medical Branch is NATO's main point of contact for MEDINT.²⁶ ACO maintains the basic MEDINT library, generates requirements and provides MEDINT products for customers. ACO also cooperates with national agencies in developing MEDINT requirements and needs.

²⁶ NATO Allied Joint Medical Doctrine for Medical Intelligence AJMedP-3, November 2008.

4. Comparing Potential DOD and NATO Biosurveillance Activities

A. NATO and DOD Capabilities

Tables 1 and 2 compare the actors and capabilities between NATO and DOD across the two main biosurveillance missions, namely FHP and biological weapons defense. It is clear that there are equivalent actors across the two organizations that fulfill similar functions. For example, the DOD's AFHSC and NATO's DHSC coordinate surveillance data generated by the Services and NATO member forces, respectively. In addition, both organizations retain a medical intelligence entity.

At the surface, it also appears that the biosurveillance-like capabilities carried out by the respective actors are also similar. DOD and NATO both conduct deployment health surveillance activities and medical intelligence activities, for example. Other similar capabilities are Environmental Detection and Identification, Deployment Health, and Occupational and Environmental Health Surveillance. Still other activities, such as NATO's Health and Disease Surveillance, are poorly defined in NATO documentation, which makes comparison to DOD capabilities problematic. It is unclear whether NATO Health and Disease Surveillance would compare to DOD Health, Comprehensive Health, and/or Medical Surveillance. Clarification of NATO Health and Disease capability is required to compare to DOD capabilities.

Table 1. Comparing DOD and NATO FHP Missions

Mission	Organization	Actors	Biosurveillance-like Capabilities
FHP	DOD	<ol style="list-style-type: none"> 1. Services 2. AFHSC 3. NCMI 	<ol style="list-style-type: none"> 1. Comprehensive Health Surveillance 2. Health Surveillance 3. Occupational & Environmental Health Surveillance 4. Deployment Health Activities 5. Medical Surveillance 6. Medical Intelligence
	NATO	<ol style="list-style-type: none"> 1. Member Nations & Services 2. DHSC 3. ACO Medical Branch 	<ol style="list-style-type: none"> 1. Health & Disease Surveillance 2. Occupational, Environmental and Industrial Health Hazards 3. CBRN Health Threats 4. Field Sanitation, Food & Water Hygiene, Veterinary Services (Food & Water-Borne Diseases) 5. Deployment Health Surveillance 6. Medical Intelligence

Table 2. Comparing DOD and NATO Biological Weapons Defense Missions

Mission	Organization	Actors	Biosurveillance-like Capabilities
Biological Weapons Defense	DOD	<ol style="list-style-type: none"> 1. Services 2. AFHSC 3. NCMI 	<ol style="list-style-type: none"> 1. Environmental Detection & Identification 2. Comprehensive Health Surveillance 3. Health Surveillance 4. Occupational & Environmental Health Surveillance 5. Deployment Health Activities 6. Medical Surveillance 7. Medical Intelligence
	NATO	<ol style="list-style-type: none"> 1. Member Nations & Services 2. DHSC 3. ACO Medical Branch 	<ol style="list-style-type: none"> 1. Environmental Detection & Identification 2. Deployment Health Surveillance 3. Medical Intelligence

B. How do potential NATO biosurveillance capabilities relate to biosurveillance mission outcomes?

Figure 1 shows how each of the DOD and NATO biosurveillance-like activities contribute to potential biosurveillance mission outcomes. Equivalent capabilities in both organizations that recognize or identify the threat or the nature of the disease threat contribute both to early warning and situational awareness. Analysis of data in the form of health risk assessments contributes both to better decision making and forecasting the impact of the event.

Outcomes of potential biosurveillance missions that were derived from the U.S. National Strategy and RAND Arroyo study are displayed in blue (DOD) and green (NATO) boxes of Figure 1. Appropriate capabilities are displayed under each box.



Figure 1: DOD and NATO FHP and biological weapons defense capabilities and their applicability to potential biosurveillance outcomes.

5. Conclusions

1. NATO biosurveillance doctrine cannot be feasibly applied to the development and implementation to DOD biosurveillance doctrine because neither organization has formal biosurveillance doctrine.
2. DOD must develop and clarify a biosurveillance doctrine. DOD already possess health and medical surveillance capabilities that would support the National Strategy for Biodefense. However, it needs to clarify how each capability would support the Strategy, how it will be supported and under whose authority it will operate.
3. NATO must develop and clarify a biosurveillance doctrine. The lack of NATO doctrine prevents comparison between NATO and DOD biosurveillance capabilities and does not allow IDA to comment on the feasibility of applying such NATO doctrine to the development and implementation of DOD biosurveillance doctrine.
4. Both DOD and NATO must ensure that biosurveillance capabilities in each organization can be interoperable. Communication and the sharing of information and analysis for all-hazards and disease threats should be encouraged. Actors and capabilities in both organizations already exist and perform biosurveillance-like capabilities. DOD and NATO should clarify doctrine on sharing and operability.
5. Sharing DOD biosurveillance data across the U.S. government and with NATO partners should be possible. DOD already has doctrine in place to support sharing medical and health surveillance data with different entities of the US government and its NATO partners through its Health Information Privacy Regulation. As stated in the regulation:

“A covered entity may disclose protected health information for public health activities to:

A public health authority that is authorized by law to collect or receive such information for the purpose of preventing or controlling disease, injury, or disability, including, but not limited to, the reporting of disease, injury, vital events such as birth or death, and the conduct of public health surveillance, public health investigations, and public health interventions; or, at the direction of a public health authority, to an official of a foreign government agency that is acting in collaboration with a public health authority.”²⁷

²⁷ Assistant Secretary for Health Affairs, “DOD Health Privacy Regulation,” DOD 602518r, January, 2003, pp 54-55.

This page is intentionally blank.

Appendix A

Illustrations

Figures

Figure 1: DOD and NATO FHP and biological weapons defense capabilities and their applicability to potential biosurveillance outcomes.....18

Tables

Table 1. Comparing DOD and NATO FHP Missions16

Table 2. Comparing DOD and NATO Biological Weapons Defense Missions.....16

This page is intentionally blank.

Appendix B

References

- AFHSC 2013/2014 Annual Report.
http://www.afhsc.mil/documents/pubs/documents/AFHSC_AnnualReport_WEB.pdf.
accessed May 8, 2015.
- Assistant Secretary for Health Affairs. *DOD Health Privacy Regulation* DOD 602518r.
January, 2003, pp 54-55.
- Department of Defense Strategy for Countering Weapons of Mass Destruction. June,
2014.
- DOD Directive. "Force Health Protection (FHP)." DoDD 6200.04, October 9, 2004.
- DOD Directive. "Comprehensive Health Surveillance". DoDD 6490.02E, February 8,
2012.
- DOD Directive. "Roles and Responsibilities Associated with the Chemical and
Biological Defense (CBD) Program (CBDP)." DoDD5160.05E, October 9, 2008.
- DOD Instruction. "Deployment Health." DoDI 6490.03, September 30, 2011.
- DOD Instruction. "National Center for Medical Intelligence (NCMI)." DoDI 6420.01,
March 20, 2009.
- Executive Office of the President, Office of Science and Technology Policy. *National
Biosurveillance Science and Technology Roadmap*. June 2013.
- Moore M, Fisher G, & Stevens C. *Toward Integrated DoD Biosurveillance (RR399A)*.
Washington, DC. RAND Corporation, 2013.
- North Atlantic Treaty Organization (NATO) *Deployment Health Surveillance*, Edition 1,
Version 1. Ratification Draft. Brussels: NATO.
- North Atlantic Treaty Organization (NATO) *Allied Joint Doctrine for Chemical,
Biological, Radiological, and Nuclear Defence* AJP-3.8(A). Brussels: NATO,
March, 2012.
- North Atlantic Treaty Organization (NATO) *Allied Joint Doctrine for Force Protection*
AJP3.14. Brussels: NATO, November 2007.
- North Atlantic Treaty Organization (NATO) *Allied Joint Medical Doctrine for Medical
Intelligence* AJMedP-3. Brussels: NATO, November, 2008.
- North Atlantic Treaty Organization (NATO) *Allied Joint Medical Doctrine for Support to
Chemical, Biological, Radiological, and Nuclear (CBRN) Defensive Operations*,
AJMedP-7. Brussels: NATO, July, 2014.
- North Atlantic Treaty Organization (NATO) *Allied Joint Medical Force Health
Protection Doctrine*, AJMedP-4. Brussels: NATO, 30 May 2011.

Office of the Secretary of Defense. *Memorandum: Interim Guidance for Implementing the National Strategy for Biosurveillance*. June 13, 2013.

White House, *National Strategy for Biosurveillance*, July 2012.

Appendix C

Abbreviations

ACO	Allied Command Operations
AFHSC	Armed Forces Health Surveillance Center
ASD(HA)	Assistant Secretary of Defense for Health Affairs
ASD(NCB)	Assistant Secretary of Defense for Nuclear, Chemical, and Biological
BWA	Biological Warfare Agent
CBEP	Cooperative Biological Engagement Program
CBRN	Chemical, Biological, Radiological, Nuclear
CCMD	Combatant Command
CONOPS	Concept of Operations
DASD	Deputy Assistant Secretary of Defense
DHSC	Deployment Health Surveillance Center
DIA	Defense Intelligence Agency
DOD	Department of Defense
DTRA	Defense Threat Reduction Agency
FHP	Force Health Protection
FP	Force Protection
GEIS	Global Emerging Infectious Surveillance and Response
IDA	Institute for Defense Analyses
IB	Integrated Biosurveillance
JDCR	Joint Doctrine, Organization, Training, Material,
JPEO-CBD	Joint Program Executive Office for Chemical and
JROC	Joint Requirements Oversight Council
JRO-CBRND	Joint Requirements Office for Chemical, Biological,
JSTO	Joint Science and Technology Office
NCMI	National Center for Medical Intelligence
NSTC	National Science and Technology Council
MEDINT	Medical Intelligence
MILMED COE	Military Medicine Center of Excellence
NATO	North Atlantic Treaty Organization
OEH	Occupational and Environmental Health Surveillance
WMD	Weapon of Mass Destruction

This page is intentionally blank.

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.				
1. REPORT DATE (DD-MM-YYYY) XX-10-2015	2. REPORT TYPE Final	3. DATES COVERED (From - To)		
4. TITLE AND SUBTITLE Analysis of NATO Doctrine for Biosurveillance		5a. CONTRACT NO. HQ0034-14-D-0001		
		5b. GRANT NO.		
		5c. PROGRAM ELEMENT NO(S).		
6. AUTHOR(S) Curling, Carl A. Finnin, Michael S.		5d. PROJECT NO. CA-6-3079		
		5e. TASK NO.		
		5f. WORK UNIT NO.		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Institute for Defense Analyses Strategy, Forces and Resources Division 4850 Mark Center Drive Alexandria, VA 22311-1882		8. PERFORMING ORGANIZATION REPORT NO. IDA Document D-5224 Log: H 15-000969		
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Office of The Surgeon General Health Care Operations, (DASG-HCO-G34) 7700 Arlington Blvd, Ste 5143 Falls Church, VA 22042-5143		10. SPONSOR'S / MONITOR'S ACRONYM(S) OTSG		
		11. SPONSOR'S / MONITOR'S REPORT NO(S).		
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT The United States is in the process of developing an "all-of-Nation" approach to a biosurveillance enterprise that will allow the U.S. to quickly detect an incident of national significance that affects human, animal, or plant health. While no formal all-of-government biosurveillance implementation doctrine exists, the Department of Defense (DOD) will and already does contribute to this notional enterprise with existing capabilities that are distributed across the DOD. The Institute for Defense Analyses was asked to report on the feasibility of the application of NATO doctrine to the development and implementation of biosurveillance concepts and doctrine. An initial search revealed that neither NATO nor DOD had formal doctrine on biosurveillance. Therefore, NATO biosurveillance doctrine could not contribute to a developing DOD biosurveillance doctrine. The existing capabilities that exist both in NATO and DOD could certainly form a starting point for a biosurveillance doctrine in DOD. They each have qualities that resonate with the U.S. Strategy for biosurveillance, which takes an approach of collecting, integrating, analyzing, and communicating all-hazards and disease activity to allow better decision making. However, for DOD and NATO to have clear and interoperable biosurveillance doctrine, specific actions should be taken based on the conclusions and recommended actions from this study.				
15. SUBJECT TERMS Biosurveillance, NATO, CBRN, all-hazards				
16. SECURITY CLASSIFICATION OF:		17. LIMITATION OF ABSTRACT	18. NO. OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE		Stewart, Harry
U	U	U	40	19b. TELEPHONE NUMBER (Include Area Code) (703) 681-8188

This page is intentionally blank.