



IMPLEMENTATION PLAN  
*for*  
THE NATIONAL HEALTH SECURITY STRATEGY  
OF THE UNITED STATES OF AMERICA

United States Department of Health and Human Services

MAY 2012



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## ABBREVIATIONS

ACF	Administration for Children and Families
AHRQ	Agency for Healthcare Research and Quality
AOA	Administration on Aging
ASL	Assistant Secretary for Legislation
ASPA	Assistant Secretary for Public Affairs
ASPE	Assistant Secretary for Planning and Evaluation
ASPR	Assistant Secretary for Preparedness and Response
BARDA	Biomedical Advanced Research and Development Authority
CBRNE	chemical, biological, radiological, nuclear, and high explosives
CDC	Centers for Disease Control and Prevention
CFBNP	Center for Faith-Based and Neighborhood Partnerships
CMS	Centers for Medicare and Medicaid Services
DHS	U.S. Department of Homeland Security
DOD	U.S. Department of Defense
DOEd	U.S. Department of Education
DOI	U.S. Department of Interior
DOJ	U.S. Department of Justice
DOL	U.S. Department of Labor
DOS	U.S. Department of State
DOT	U.S. Department of Transportation
EMS	emergency medical services
EPA	U.S. Environmental Protection Agency
ESAR-VHP	Emergency System for Advance Registration of Volunteer Health Professionals
EUA	Emergency Use Authorization
FCC	Federal Communications Commission
FDA	U.S. Food and Drug Administration
FEMA	Federal Emergency Management Agency
FETIG	Federal Education and Training Interagency Group

FIPP	Fair Information Practice Principles
FSMB	Federation of State Medical Boards
GHSI	Global Health Security Initiative
HHS	U.S. Department of Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act
HRSA	Health Resources and Services Administration
ICS	Incident Command System
IGA	Intergovernmental Affairs
IHR	International Health Regulations
IHS	Indian Health Service
IIG	<i>Interim Implementation Guide</i> (NHSS)
IRB	Institutional Review Board
LIMS	Laboratory Information Management Systems
MCM	Medical Countermeasures
MCMi	Medical Countermeasures Initiative
MRC	Medical Reserve Corps
NAHERC	National Animal Health Emergency Response Corps
NAPAPI	North American Plan for Avian and Pandemic Influenza
NBSHH	National Biosurveillance Strategy for Human Health
NCDMPH	National Center for Disaster Medicine and Public Health
NDMS	National Disaster Medical System
NEHA	U.S. National Environment Health Association
NHSS	<i>National Health Security Strategy</i>
NHTSA	National Highway Traffic Safety Administration
NIH	National Institutes of Health
NIMS	National Incident Management System
NIPP	National Infrastructure Protection Plan
NRC	National Research Council or Nuclear Regulatory Commission
NSS	National Security Strategy
NVAC	National Vaccine Advisory Committee
OCR	Office for Civil Rights
OASH	Office of Assistant Secretary of Health
OD	Office on Disability

ODNI	Office of the Director of National Intelligence
OGA	Office of Global Affairs
ONC	Office of the National Coordinator for Health Information Technology
OSG	Office of the Surgeon General
OSSI	Office of Security and Strategic Information
OSTP	Office of Science and Technology Policy
OCVMRC	Office of the Civilian Volunteer Medical Reserve Corps
PAHPA	Pandemic and All Hazards Preparedness Act
PHEMCE	Public Health Emergency Medical Countermeasures Enterprise
PHERRB	Public Health Emergency Research Review Board
QHSR	Quadrennial Homeland Security Review
SAMSHA	Substance Abuse and Mental Health Services Administration
SCIP	statewide communication interoperability plan
SLEP	Shelf Life Extension Program
SNS	Strategic National Stockpile
UPMC	University of Pittsburgh Medical Center
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture
VA	U.S. Department of Veterans Affairs
WHO	World Health Organization

## INTRODUCTION

The *National Health Security Strategy* (NHSS), released by the U.S. Department of Health and Human Services (HHS) in December 2009, provides the first comprehensive strategic approach to successfully prevent, protect against, mitigate, respond to, and recover from incidents with potentially negative health consequences, including terrorist attacks, natural disasters, disease outbreaks, hazardous material spills, nuclear accidents, and chemical, biological, radiological, nuclear, and high explosive (CBRNE) incidents.<sup>1</sup> The NHSS is designed to focus the efforts and unique strengths of the Nation's communities, including individuals and their families; private-sector, nongovernmental, and academic organizations; and all forms of government (i.e., local, state, territorial, tribal, and federal). The *Interim Implementation Guide* identified initial tasks that provide the foundation for further planning and implementation.<sup>2</sup>

The purpose of this companion document, the first *Implementation Plan*, which replaces the *Interim Implementation Guide*, is to describe the outcomes that the Nation hopes to achieve in the next four years to indicate that the NHSS's strategic objectives have been met, as well as the priority implementation activities to be undertaken to help attain that end. Like the NHSS, the *Implementation Plan* is designed to draw on the collaborative efforts of all sectors of society. In short, the *Implementation Plan* describes the basic implementation approach required to achieve the strategic objectives in the NHSS.

This *Implementation Plan* is consistent with Presidential Policy Directive – 8 (PPD-8): National Preparedness and supports numerous core capabilities of the National Preparedness Goal including Public Information and Warning; Screening, Search, and Detection; Community Resilience; Public Health and Medical Services; Operational Communications; Fatality Management Services; and Health and Social Services, among other core capabilities.

### **A Vision of National Health Security**

The NHSS defines national health security as follows:

National health security is achieved when the Nation and its people are prepared for, protected from, respond effectively to, and are able to recover from incidents with potentially negative health consequences.

The NHSS is designed to achieve two goals, as described below.

**Build community resilience.** Community resilience entails the capacity of the community to account for its vulnerabilities and develop capabilities that aid that community in (1) preventing, withstanding, and mitigating the stress of a health incident; (2) recovering in a way that restores the community to a state of self-sufficiency and at least the same level of health and social

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<sup>1</sup> U.S. Department of Health and Human Services, *National Health Security Strategy*, Washington, D.C., December 2009 (accessed online May 12, 2011, at <http://www.phe.gov/Preparedness/planning/authority/nhss/strategy/Documents/nhss-final.pdf>).

<sup>2</sup> U.S. Department of Health and Human Services, *Interim Implementation Guide for the National Health Security Strategy*, Washington, D.C., December 2009 (accessed online May 12, 2011, at <http://www.phe.gov/Preparedness/planning/authority/nhss/implementationguide/Documents/iig-final.pdf>).

functioning after a health incident; and (3) using knowledge from a past response to strengthen the community's ability to withstand the next health incident.

**Strengthen and sustain health and emergency response systems.** Services provided by public health, health care delivery, and emergency response systems develop and sustain national health security. The ability of these systems to help communities prevent, protect against, mitigate, respond to, and recover from incidents with potentially negative health consequences is supported by effective and efficient daily operations. Such systems must themselves be resilient in that they should be durable, robust, responsive, adaptive to changing situations, efficient, interoperable, sustainable, and strengthened through evidence-based resource investments.

The approach to achieving the national health security goals and realizing the broad vision of the NHSS within four years is best described through ten strategic objectives. These strategic objectives provide direction to guide policies, resources, programs, and activities. They are:

1. Foster informed, empowered individuals and communities.
2. Develop and maintain the workforce needed for national health security.
3. Ensure situational awareness.
4. Foster integrated, scalable health care delivery systems.
5. Ensure timely and effective communications.
6. Promote an effective countermeasures enterprise.
7. Ensure prevention or mitigation of environmental and other emerging threats to health.
8. Incorporate post-incident health recovery into planning and response.
9. Work with cross-border and global partners to enhance national, continental, and global health security.
10. Ensure that all systems that support national health security are based upon the best available science, evaluation, and quality improvement methods.

## **Key Themes and Assumptions**

It is important that all stakeholders understand the context in which the *Implementation Plan* was developed and is being implemented, as well as some of the critical assumptions underlying this plan.

**Achieving national health security requires a collaborative approach.** Such an approach involves a shared understanding of the community priorities and coordinated development and implementation of common solutions<sup>3</sup> among individuals and their families; private-sector, nongovernmental, and academic organizations; and all forms of government (i.e., local, state, territorial, tribal, and federal). Although government agencies may contribute resources and leadership and assist in establishing or coordinating coalition activities among governmental and nongovernmental entities and other stakeholders, national health security is the responsibility of the entire Nation. The *Implementation Plan* emphasizes collaboration and flexibility for

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<sup>3</sup> For example, the *Quadrennial Homeland Security Review* (QHSR) refers to the “homeland security enterprise,” which involves enhancing shared awareness of risks and threats, building capable communities, fostering unity of effort, and fostering innovative approaches and solutions through leading-edge science and technology. See U.S. Department of Homeland Security, *Quadrennial Homeland Security Review Report: A Strategic Framework for a Secure Homeland*, Washington, D.C., February 2010.

communities to determine how they might best contribute their resources and expertise. Integration and coordination are essential, and include:

- interoperability to ensure that systems' infrastructure and technologies, such as those used for communication and situational awareness, function effectively together
- international coordination, because threats, information, and resources may be global in origin
- public health, health care delivery, and emergency management systems working together to create an integrated national health security system.

**All activities arising out of this plan must be integrated with other national security and health-related initiatives to ensure that resources are used effectively and efficiently.** The scope and complicated nature of health threats faced by the Nation require interdisciplinary approaches, such as those associated with the One Health Initiative.<sup>4</sup> Further, the Affordable Care Act directly impacts efforts to achieve the NHSS's second goal of strengthening and sustaining health and emergency response systems and its fourth Strategic Objective, "Foster integrated, scalable health care delivery systems." Finally, integration of activities across objectives will allow investments in a given activity to pay dividends across strategic objectives and enable completion of activities under other objectives.

**Community resilience is the foundation.** In order to maintain health and well-being, communities must be resilient to withstand—sometimes without assistance for several days—and quickly recover from the incident. Therefore, they must be resilient prior to the incident. The components of community resilience that affect both a community's pre-incident vulnerability and its adaptive capacity to recover include the physical and behavioral health of the population; social and economic well-being; individual, family, and community knowledge and attitudes regarding self-reliance and self-help; effective risk communication; integration of governmental and nongovernmental organizations in planning, response, and recovery; and the social connectedness of community members. In order to be resilient, a community must:

- actively engage community stakeholders in pre-incident planning and personal preparedness
- develop social networks
- create health promotion opportunities to improve the physical and behavioral health of the community, as well as to address disparities in health across subgroups
- implement and evaluate plans and programs that support the functional and social needs of at-risk individuals (including children)
- have plans to respond effectively to community members' post-incident physical and behavioral health needs
- develop recovery plans for health and social systems that can be activated immediately when an incident occurs

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<sup>4</sup> "The One Health Initiative is a movement to forge co-equal, all-inclusive collaborations among physicians, veterinarians, and other scientific-health and environmentally related disciplines, including the American Medical Association, American Veterinary Medical Association, the American Society of Tropical Medicine and Hygiene, the Centers for Disease Control and Prevention (CDC), the U.S. Department of Agriculture (USDA), and the U.S. National Environmental Health Association (NEHA)." See One Health Initiative website (accessed online May 12, 2011, at <http://www.onehealthinitiative.com/>).

- establish technical infrastructure to activate and connect disparate health and social systems immediately when an incident occurs.

**The needs of at-risk individuals must be addressed.** While embracing a “whole community” approach to planning, this *Implementation Plan* acknowledges that the needs of at-risk individuals, such as people with disabilities or behavioral health concerns, children, seniors, those with limited English proficiency, and other vulnerable or underserved populations, must be addressed across the lifespan. Many individuals may require assistance before, during, or after an incident. In resilient communities, individuals who are able to care for themselves will do so—enabling governmental and nongovernmental entities to focus limited resources on those at greatest risk.

HHS has developed the following definition of *at-risk individuals*:

Before, during, and after an incident, members of at-risk populations may have additional needs in one or more of the following functional areas: communication, medical care, maintaining independence, supervision, and transportation. In addition to those individuals specifically recognized as at-risk in the Pandemic and All-Hazards Preparedness Act (i.e., children, senior citizens, and pregnant women), individuals who may need additional response assistance include those who have disabilities, live in institutionalized settings, are from diverse cultures, have limited English proficiency or are non-English-speaking, are transportation disadvantaged, have chronic medical disorders, and have pharmacological dependency.<sup>5</sup>

Of specific concern are those individuals with special medical needs. These individuals, typically living in the community outside of a medical setting or environment, may need support to maintain an adequate level of health and independence during times of emergency. Included in this category are individuals who before, during, and after an emergency are medically dependent on uninterrupted electricity for therapies, require continual or intermittent medical care/support from a health care professional, or are not self-sufficient without support from caregivers.

Addressing the needs of at-risk individuals requires consideration of incident-based or situational risk, because the characterization of at-risk populations will differ depending on the incident. Such considerations will affect the development, exercising, and implementation of plans to support national health security.

**National health security must be achieved and supported in a resource-constrained environment.** The activities in this plan are priorities intended to be executed with existing resources. It is assumed that there will be no significant additional public funds available for national health security for several years. Federal agencies should seek opportunities to work collaboratively with organizations and individuals by using available funding mechanisms. The effective performance of many day-to-day activities can also contribute to national health

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<sup>5</sup> U.S. Department of Health and Human Services (HHS), “At-Risk Individuals, 2012” (accessed online May 13, 2011, at <http://www.phe.gov/Preparedness/planning/abc/Pages/at-risk.aspx>).

security objectives. Existing grant and cooperative agreement programs relevant to national health security should leverage and complement one another—based on the principle that multi-use strategies and tactics should be used. National health security depends on time, effort, and expertise. A significant portion of relevant resources that can support national health security are within community-based organizations, private businesses, and individuals—not the government. It is important to explore new and creative ways to leverage existing resources so that they are used more efficiently and effectively and to identify innovative ways to stimulate nongovernmental investments.

**To make significant progress in achieving the NHSS’s strategic objectives, a number of important legal and other considerations must be addressed.** National health security should be supported by legal preparedness. After a large-scale incident with potentially negative health consequences, local, state, or federal leaders might make emergency declarations that can change the legal environment for the duration of the incident. These considerations might apply to one or more of the NHSS’s strategic objectives. Some legal concerns<sup>6</sup> might require changes in federal or state law. Other concerns might be due to misunderstandings or assumptions concerning the legal environment and might be resolved by incorporating legal counsel in national health security policymaking and planning, using interagency and cross-jurisdictional memoranda of understanding, and providing enhanced legal preparedness training for counsel working in agencies involved in national health security. Policy and procedural changes might reduce administrative barriers to national health security.

**A flexible, supportive environment is needed for workers to be ready and able to perform national health security tasks.** Supportive community and organizational systems require an environment in which workers feel comfortable and confident participating in national health security activities. Further, the system must be able to adapt and continue to function in the absence of any individual worker. Such a system requires sufficient cross-training so that all necessary roles and responsibilities are executed continuously during and after an incident. Organizations and workers must have plans in place to assist workers’ families during response or recovery. Workers must be appropriately trained and protected so they feel confident in performing their duties, particularly during a response period in which there are potentially harmful exposures. A plan must also be in place to assist workers in returning to normal duties after the incident and to address other needs, including behavioral health and workers’ need for leave, rest, and recovery.

### **Purpose and Organization of the *Implementation Plan***

Implementation of the NHSS is a long-term proposition. The NHSS is ambitious in scope, and achieving the outcomes identified in the *Implementation Plan* is a formidable task.

The *Implementation Plan* identifies measurable outcomes that should be realized to achieve the strategic objectives in the NHSS and also identifies high-priority implementation activities to be initiated, subject to the availability of resources. Where possible, this plan provides specific actions, roles, and responsibilities, while allowing for adaptation. A lead federal agency or

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<sup>6</sup> Examples include worker compensation protections, health information privacy, crisis standards of care, waivers of informed consent, licensing and credentialing of volunteers, liability protections, and isolation and quarantine authorities.

agencies are listed for each activity; however, the critical role of local, state, territorial, and tribal public health and other agencies as well as the nongovernmental and private sectors in implementing these activities must be acknowledged. Nonfederal governmental agencies not only have statutory authority and responsibility for protecting the public's health and administering many of the programs and services relevant to national health security, but, along with nongovernmental and the private sectors, have extensive experience and success in initiating and implementing many of the activities described in this plan. Given the decentralized nature of the national health security system, expectations about implementation must be predicated on common understandings of problems and solutions, a notion of shared responsibility, and recognition that success requires securing commitments from a range of partners for specific action. The outcomes and activities identified in this plan are intended to guide national health security and related priorities among community sectors and, as such, should align with a broad range of programs and policies.

Each of the following ten chapters corresponds with one of the ten NHSS strategic objectives. Each chapter provides:

- an overview of the objective, including a broad implementation approach
- a list of desired four-year outcomes (i.e., prior to the next quadrennial NHSS)
- a list of critical implementation activities to be undertaken—including the lead and co-lead organizations responsible for coordinating those activities, identifying realistic milestones and appropriate indicators for measuring implementation, and reporting on the status of implementation
- the lead and co-lead organizations and potential partner stakeholders for each implementation activity. Potential partners represent stakeholders and institutional expertise and resources that lead and co-lead organizations may engage to accomplish objectives, outcomes, and activities.

Appendix A provides a summary of objectives, outcomes, activities, lead, co-lead, and potential partner agencies for all implementation activities. Appendix B explains, for each strategic objective, which national health security capabilities are addressed. Appendix C contains a glossary of key terms.

Indicators for the activities will be developed by lead and co-lead agencies, and progress will be initially reported to ASPR 12 months after approval of this document, and annually thereafter. Progress toward completion of activities in the *Implementation Plan* will inform the quadrennial review and development of the next NHSS and *Implementation Plan*.

## OBJECTIVE 1: FOSTER INFORMED, EMPOWERED INDIVIDUALS AND COMMUNITIES

National health security stands on a foundation of individuals and communities that are aware of and informed about health security risks and empowered to prevent, protect against, mitigate, respond to, and recover from large-scale incidents with potentially negative health consequences. Informed, empowered *individuals* have the information, skills, and resources they need to protect their own health, safety, and social well-being. Informed, empowered *communities* have built strong neighbor-to-neighbor connections and have contingency plans, communications plans, and provisions in place to shelter, sustain, and provide medical and other care for the entire community, including at-risk individuals, such as people with disabilities or behavioral health concerns, children, seniors, those with limited English proficiency, and other vulnerable or underserved populations. Achieving national health security includes ensuring that all individuals' physical and behavioral health needs, as well as their functional needs and social well-being, are provided for during incident response and recovery phases.

National health security efforts benefit from a “whole community” approach that focuses on fostering community partnerships among individuals and their families; private-sector, nongovernmental, and academic organizations; and all forms of government (i.e., local, state, tribal, territorial, and federal).<sup>7</sup> The involvement of a wide range of community partners supports the identification of community priorities and concerns and promotes integration and coordination of activities to address the needs of at-risk individuals. Activities to foster informed, empowered individuals and communities are already taking place within all levels of government and in nongovernmental organizations and the private sector. Such activities should be encouraged, and promising practices should be shared with partners as part of an ongoing national collaborative strategy. A partnership of federal agencies will provide support to all levels of government and private-sector partners to help inform and empower individuals and communities.

Promoting education, inclusion, and empowerment enhances individual and community resilience. Resilience should be understood as a set of capabilities already present in individuals, families, and communities that can be strengthened in a systematic way. Resilient communities are able to leverage their assets, strengths, and resources to prevent, protect against, mitigate, respond to, and recover from incidents. Volunteers play a key role in building strong communities; the recruitment and management of volunteers is covered in Strategic Objective 2.<sup>8</sup>

Progress toward the NHSS goal of building community resilience begins with informed and empowered individuals and communities. Efforts to foster informed and empowered individuals and communities include promoting individual involvement in communities, including local

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<sup>7</sup> Communities are traditionally defined geographically; however, for purposes of this *Implementation Plan*, a community can refer to a neighborhood, a jurisdiction, or multiple jurisdictions and includes individuals and their families; private-sector, nongovernmental, and academic organizations; and all forms of government (i.e., local, state, tribal, territorial, and federal).

<sup>8</sup> As discussed in Strategic Objective 2, the term *volunteers* includes both people who are (1) associated formally with the system (e.g., register as part of a reserve workforce, train in functional roles with staff or other volunteers such as MRC, and participate on an interim basis) and (2) ad hoc (e.g., feel compelled to help other workers prior to, during, or following an incident and, in some response instances, require just-in-time training).

health security decisionmaking, and providing the public with accurate and culturally and linguistically relevant risk information. Citizen-to-citizen support will promote positive decisionmaking and resilience in the face of adversity and is an essential ingredient to the overall health of a community.

To achieve this objective, community members must be knowledgeable about national health security risks and local resources available to address them as well as ways to prevent, protect against, mitigate, respond to, and recover from an incident. **Community education** is an ongoing process in which the community acquires knowledge about roles, responsibilities, and expectations for individual preparedness as well as the ways in which individuals can work collectively with other community members to prevent, protect against, mitigate, respond to, and recover from an incident. Community education involves not only individuals' receipt and uptake of information, but also the ability to use that information in ways that strengthen the community. Empowered communities are characterized by two-way information flow between community members and their leaders, in which knowledge is shared and there is broad participation in planning and response activities.

Health literacy provides an important foundation for community education. Health literacy involves three dimensions: the basic knowledge needed by individuals to fully understand and take action on health issues (conceptual foundations), the skills necessary to make public health decisions that benefit the community (critical skills), and the skills and resources necessary to address health concerns through civic engagement (civic orientation).<sup>9</sup> While health literacy is an issue that extends beyond national health security, efforts to develop community resilience should build on existing efforts to improve health literacy.

Communities must be able to engage individuals, particularly at-risk individuals with functional needs, in local health security planning. This **community partnership** entails the active collaboration of government and other community sectors, particularly nongovernmental organizations (including nonprofit community-based organizations, faith-based organizations, and volunteer organizations) and private-sector businesses, to support community-level efforts for incident response and recovery planning, including exercises. Communities can use partnerships and community networks to enhance **social connectedness** in the response and recovery phases. Robust social networks can be used for preparedness planning and subsequently leveraged during incident response and recovery.

**Community empowerment** involves the meaningful and appropriate engagement of community members in developing health security plans at the individual and community levels. Community empowerment also involves individual and community self-awareness regarding the hazards to which the community is exposed, the vulnerabilities that may impact the community during an incident, and the strengths and assets in the community that can be leveraged to mitigate harm to the community and promote recovery.

The long-term implementation approach for fostering empowered, engaged individuals and communities is to assess the baseline and subsequent levels of community resilience across the

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<sup>9</sup> D. A. Freedman, K. D. Bess, H. A. Tucker, D. L. Boyd, A. M. Tuchman, and K. A. Wallston, "Public Health Literacy Defined," *American Journal of Preventive Medicine*, Vol. 36, No. 5, 2009, pp. 446–451.

Nation and to generate proactive, collaborative, community-based action and public participation. First, it is important to analyze existing community partnerships engaged in community planning for national health security to identify promising and best practices for integrated cross-sector health security planning at the community level. Second, existing health risk communication messages need to be strengthened and adapted to place increased emphasis on citizens' empowerment and participation in planning and operations to meet their own and their neighbors' needs. Third, voluntarily engaged local, state, territorial, and tribal governments can work together to conduct pilot projects designed to promote community resilience through participatory planning and leveraging of social networks. These three cross-cutting strategies are integrated throughout the chapter and should help achieve the four-year outcomes and related activities described below.

The following list represents the desired four-year outcomes that together will foster informed and empowered individuals and communities. To achieve these critical outcomes, this *Implementation Plan* must build on activities already underway across the Nation. The activities listed under each outcome below will be initiated, subject to availability of resources, to help achieve these outcomes.

<b>Four-Year Outcomes for Fostering Informed, Empowered Individuals and Communities</b>
<ul style="list-style-type: none"> <li>• Individuals and communities have access to health and behavioral health information and are able to effectively incorporate risk information into plans supporting national health security.</li> <li>• Community members, including at-risk individuals, utilize information about health threats and behavioral health risks to prevent, protect against, mitigate, respond to, and recover from incidents and know where to turn for help for both themselves and their neighbors.</li> <li>• Partnerships and integrated cross-sector plans are in place at the community level.</li> <li>• Social networks are leveraged to enhance community education, awareness, and response.</li> </ul>

**1.1 Individuals and Communities Have Access to Health, Public Health, and Behavioral Health Information and Are Able to Effectively Incorporate Risk Information into Plans Supporting National Health Security**

Factors such as disability, age, socioeconomic status, culture, and limited English proficiency can shape communication and meaning, perceptions of risk, and the capacity to understand and act on public health messages. As a result, some individuals may be less likely or able to respond appropriately during an incident. Communication during an incident is further complicated by the range of information sources to which individuals might or might not have access, including alternative sources of information, such as online social media, popular news media, ethnic media, language-specific media, or neighbors, friends, and family. Community education should involve a dialogue among members of the community about risks and how to best use resources and information to address the consequences of an incident.

The following activities will be undertaken in support of this outcome:

- **1.1.1 The Assistant Secretary for Preparedness and Response (ASPR) will convene a partnership of federal agencies and work with nonfederal partners to identify pilot projects to develop messages that promote citizen action and participation in whole-community health security planning. (Potential partners: Administration for Children and Families [ACF], Administration on Aging [AOA], Centers for Disease Control and Prevention [CDC], Department of Homeland Security [DHS], Department of Defense [DOD], Department of Interior [DOI], Office on Disability [OD], Office of the National Coordinator for Health Information Technology [ONC], Office of the Surgeon General [OSG], Office of the Civilian Volunteer Medical Reserve Corps [OCVMRC]; local, state, territorial, and tribal governments; nongovernmental organizations; private sector.)**
  - Behavioral outcomes to be promoted in health security messaging will prominently feature involvement in planning and action to meet the needs of neighbors and others in the community. Opportunities for participation in processes spanning all phases of national health security will become a centerpiece of messaging in pilot project communities.
  - Pilot projects will develop and utilize metrics of community participation to evaluate efficacy in promoting empowerment and participatory planning.
- **1.1.2 ASPR will convene a partnership of federal agencies and work with nonfederal partners to build on existing efforts to access information about engaging community-based organizations (e.g., cultural, civic, faith-based groups, schools, businesses) and social networks to develop and disseminate preparedness information and/or supplies. (Potential partners: Administration for Children and Families [ACF], CDC, DHS, DOI, OSG, OCVMRC; local, state, territorial, and tribal governments; nongovernmental organizations.)**
  - Identify trusted sources of information and help encourage public involvement and open communication before, during, and after a crisis.
  - Train personnel in community-based organizations in crisis and risk communication principles and help them partner with official communications/messaging personnel.
  - Stress the importance of consistency, timeliness, and transparency in communicating during an emergency and ensure that messages are adapted to communicate effectively with a variety of communities.

## **1.2 Community Members, Including At-Risk Individuals, Utilize Information About Health Threats and Behavioral Health Risks to Prevent, Protect Against, Mitigate, Respond to, and Recover from Incidents and Know Where to Turn for Help for Both Themselves and Their Neighbors**

While substantial progress has been made in the past several years in the development of community risk profiling methods and community education about health threats, gaps remain in knowledge about strategic use of risk assessments and community education to promote community empowerment in health security planning. Linkages between risk communication

practices and greater involvement by community members in preparedness, response, and recovery planning represent an important element in community empowerment and are best supported by a strong evidence base. Identifying promising practices to translate health risk communication methods into increased community member participation in health security planning and increased community resilience represents a key next step, which builds on existing knowledge and activity in the field of risk profiling and communication. Risk information should support empowerment and, while identifying community vulnerabilities, should be used to access and mobilize community strengths, assets, and capabilities.

The following activities will be undertaken in support of this outcome:

- **1.2.1 ASPR will convene a partnership of national health security entities to identify promising practices for the development and use of health security risk assessments to promote community empowerment in health security planning. (Potential Partners: CDC, DHS, DOI, Intergovernmental Affairs [IGA], ONC; local, state, territorial, and tribal governments; nongovernmental organizations; private sector.)**
  - Identify local, state, territorial, and tribal governments and nongovernmental partners either currently engaged in work on community health risk assessments or interested in developing that capacity to form a partnership.
  - Identify existing knowledge, tools, and practices that have already been developed for determining community health risks, including products and activities (such as challenge grants and health information exchange tools) conducted by government agencies at all levels as well as by academic and research centers, and existing knowledge about the use of risk assessments to promote community empowerment in health security planning.
- **1.2.2 ASPR will work with partners to identify promising practices for the use of risk assessment and risk communication tools at the community level in ways conducive to awareness of health risks and involvement in health security planning by community members. (Potential Partners: CDC, DHS, Department of Commerce [DOC], DOI, Health Resources and Services Administration [HRSA], IGA, Office of Assistant Secretary of Health [OASH], Office for Civil Rights [OCR], OD, Center for Faith-Based and Neighborhood Partnerships [CFBNP], Substance Abuse and Mental Health Services Administration [SAMHSA]; planning group comprised of local leaders representing government and nongovernmental organizations.)**
  - Identify local, state, territorial, and tribal governments and nongovernmental partners interested in participating in a pilot project to identify promising practices for establishing measures for risk communication uptake and utilization by community members.
  - Identify and compile existing knowledge and activities regarding measures of risk communication utilization (measures related to both promotion of messaging and subsequent utilization) by community members, with particular attention to utilization of health risk messaging by at-risk individuals.

- This plan should pay particular attention to assessing whether and how at-risk individuals are using information to address pre-incident vulnerabilities.<sup>10</sup>

### 1.3 Partnerships and Integrated Cross-Sector Plans Are in Place at the Community Level

Many local organizations become *de facto* first responders because of their proximity to an incident or connection to an affected population. Formalizing relationships among public health, health care, behavioral health, human services, emergency medical services (EMS), law enforcement, and other organizations involved in national health security can improve their capacity to participate more efficiently. Regional partnerships, including partnerships across state and local government agencies, should be emphasized. At the same time, organizations that have not previously been part of incident planning<sup>11</sup> should be engaged as new partners in national health security to increase local capacity.

Increased collaboration and integration across organizations (in both the public and private sectors, and across levels of government) can lead to the formation of new community partnerships, which can be leveraged for the benefit of the whole community. Establishing working committees with a representative, cross-sector population will ensure more coordinated emergency planning (and facilitate regional planning).<sup>12</sup> Further, multisector collaboration can be used to discuss the larger issue of community resilience and how to measure it.

The following activities will be undertaken in support of this outcome:

- **1.3.1 ASPR will convene a partnership of federal agencies and work with nonfederal partners to identify and promote promising practices for involving governmental and nongovernmental organizations, including professional organizations and the private sector, in local emergency planning committees or other relevant bodies with a role in national health security. (Potential Partners: ACF, Assistant Secretary for Planning and Evaluation [ASPE], CDC, DHS, DOI, OASH; local, state, territorial, and tribal governments; nongovernmental organizations; private sector, local leaders [e.g., from public health and lead nongovernmental organizations]; academia; training centers.)**
  - Include guidance on expectations for stakeholder involvement, with information on how to assess effective partnerships and maximize the roles and benefits of governmental and nongovernmental leaders on these planning groups or committees.

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<sup>10</sup> WHO's Expanded Programme on Immunization cluster sampling method might be useful as part of a rapid needs assessment methodology. See Stacy Foshaw-Woodard, *Description and Comparison of the Methods of Cluster Sampling and Lot Quality Assurance Sampling to Assess Immunization Coverage*, Geneva: World Health Organization, Department of Vaccines and Biologicals, 2011. A training resource for local health departments on conducting a rapid needs assessment is available from the University of North Carolina Center for Public Health Preparedness (*Focus on Field Epidemiology*, Vol. 5, No. 3: Rapid Needs Assessment and GIS, no date, accessed online May 13, 2011, at <http://nccphp.sph.unc.edu/focus/vol5/issue3/>).

<sup>11</sup> These include, for example, professional and faith-based organizations, private business, and other nongovernmental organizations with ties to the local community.

<sup>12</sup> FEMA's *Comprehensive Preparedness Guide (CPG) 101* provides guidance to local, state, territorial, and tribal emergency managers on developing a unified emergency operations plan that addresses all community members. *CPG 101* can assist planners at all levels of government in their efforts to develop and maintain all-hazards emergency operations plans.

- Guidance might also include specific examples from exemplary communities that could be adapted, and that provide enough flexibility for local adoption (e.g., identifying existing resources provided by local, state, territorial, tribal, and federal authorities and nongovernmental organizations; determining ways to leverage dollars for dual use or benefit; building the capacity of nongovernmental organizations as partners in national health security; maximizing resources across governmental and nongovernmental partnerships).
- **1.3.2 ASPR will work with partners to identify key indicators of community resilience-capacity-building. (Potential Partners: ACF, AOA, CDC, DHS, DOI, IGA, Indian Health Service [IHS], OASH, OCR, OD, CFBNP, SAMHSA; local, state, territorial, and tribal governments; nongovernmental organizations; professional and governmental associations; academia.)**
  - Use multiple approaches, including focus groups, webinars, stakeholder meetings, community-based participatory research, and pilot studies.
  - Include at-risk individuals and organizations representing the interests of at-risk individuals in this process.
  - Synthesize existing research and theory to develop a science-based set of measures that can be employed in future program evaluation of resilience-building projects.
  - Metrics that can be considered include the proportion of families who have stockpiled food, water, and medical supplies and the length of time that families expect to be able to take care of themselves in the absence of government services. Additional measures of progress can be gauged by monitoring funding for preparedness programs and ensuring that benchmarks for the inclusion of at-risk individuals and behavioral health issues are set and achieved.

#### **1.4 Social Networks Are Leveraged to Enhance Community Education, Awareness, and Response**

Social networks have the power to influence the behavior of community members and shape the landscape of community life; therefore, it is critical to enlist leaders in existing neighborhood/community networks in the work of promoting awareness of health risks, disseminating preparedness information and resources, and participating in community-level health security planning. Social networks include a wide array of local and neighborhood-level groupings, such as parent-teacher groups, centers of worship, sports and recreational associations, neighborhood action groups, community-level advocacy groups, cultural and ethnic community organizations, and numerous other groupings of community members who associate and communicate with one another in person or, in some cases, through electronic social media.

Social networks offer formidable potential to build overall community resilience and to significantly improve the level of participation of the population at large in meaningful community-level health security planning. For many citizens, the Internet has become a primary venue for social networking, and virtual communities are important sites for information-sharing and planning. Social media and Internet-based communities, therefore, can be valuable tools to promote national health security. At the same time, a focus solely on the Internet marginalizes

many individuals, particularly older adults and low-income families, who do not utilize or have access to the Internet. Effective leveraging of social networks requires engagement with both cyberspace and the traditional means of face-to-face communication.

The following activity will be undertaken in support of this outcome:

- **1.4.1 ASPR will convene a partnership of federal agencies and work with nonfederal partners involved in national health security to create a pilot project to develop tools to assist community-based social networks in providing leadership in disseminating risk information, building resilience, and promoting participation in community-level health security planning. (Potential Partners: ACF, ASPE, CDC, DHS, ONC; local, state, territorial, and tribal governments; nongovernmental organizations; local leaders [e.g., from public health and lead nongovernmental organizations]; academia; training centers].)**
  - Identify local, state, territorial, and tribal governments already engaged in or interested in working on projects to involve social networks and grassroots-level community leaders in community resilience, and invite them to participate in a pilot project on tool development.
  - In the pilot project described above, identify and build on existing work on tools to promote involvement of social networks in health security planning, health risk communication, and community resilience.

## OBJECTIVE 2: DEVELOP AND MAINTAIN THE WORKFORCE NEEDED FOR NATIONAL HEALTH SECURITY

National health security depends on a competent and sizable workforce. The national health security workforce comprises staff and volunteers from all sectors and multiple disciplines and functional roles, including, but not limited to, public health, health care, academia, behavioral health, human services, EMS, and law enforcement.<sup>13</sup> Developing and maintaining this workforce requires efforts to ensure a sufficient number of qualified and proficient workers.

A qualified, proficient, diverse, and culturally competent national health security workforce is ready, willing, and able to prevent, protect against, mitigate, respond to, and recover from incidents with potentially negative health consequences. Members of the workforce must be able to competently provide essential services to the communities they serve by demonstrating proficiency within their skill sets and functional role(s) as well as communication and integration skills to facilitate collaboration in multidisciplinary teams and across multiple cultures. Workforce competency should be consistent throughout all sectors of the system and within all communities.

An adequately sized national health security workforce has a sufficient supply of staff and volunteers to meet everyday community health and related needs as well as a surge in demand for services. Since routine health care and public health functions are foundational, planning for and responding to major incidents should not preclude but, rather, expand those services. The workforce requires a sufficient number of workers and should reflect the diversity of the Nation. Additionally, knowledge of the geographic distribution of workers with specific skill sets is essential for coordination of functions, teams, and services during incidents.

Synthesizing and aligning existing data and efforts to foster coordinated and integrated frameworks and systems for staff and volunteer recruitment, development, training, and management are common themes. The broad, long-term implementation approach is two-fold. One component is to focus on competency identification and development; incorporating function-specific and core competencies into education and trainings; testing proficiency through exercises; and using evaluation data, exercise results, and empirical research to improve education, training, and exercises. The second long-term component is to encourage interest in national health security among existing workers and to test, implement, and evaluate new and improved recruitment and retention tactics and programs. All of this will be informed by synthesis of existing data from research and other sources to generate an accurate assessment of the size and composition of the workforce needed for national health security.

The list below represents the desired four-year outcomes that will support the development and maintenance of the workforce needed for national health security. The activities listed under each

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<sup>13</sup> Throughout the *Implementation Plan*, the term *workers* is intended to refer to both staff and volunteers. The term *staff* refers to paid workers. The term *volunteers* includes both people who are (1) associated formally with the system (e.g., register as part of a reserve workforce, train in functional roles with staff or other volunteers such as MRC, and participate on an interim basis) and (2) ad hoc (e.g., feel compelled to help other workers prior to, during or following an incident and, in some response instances, require just-in-time training). All three of these worker types need to function well, be accounted for, and be well managed in all phases of national health security. This includes students as workers.

outcome below will be initiated, subject to availability of resources, to facilitate progress toward achieving the outcomes. It will be necessary to leverage existing efforts (including non–health security professional development and recruitment initiatives, such as those trying to increase the number of primary care providers) rather than creating new ones.

**Four-Year Outcomes for Developing and Maintaining  
the Workforce Needed for National Health Security**

Outcomes that support a qualified and proficient workforce:

- Staff and volunteers can perform their roles and responsibilities safely, efficiently, and effectively during prevention, protection, mitigation, response, and recovery.
- Staff and volunteers have received competency-based national health security training.

Outcomes to support an adequately sized workforce:

- Communities have an adequate number of staff and volunteers to provide national health security capabilities, and can access and mobilize additional personnel as needed.
- A systematic approach is in place to coordinate and manage health care delivery volunteers during an incident.

**2.1 Staff and Volunteers Can Perform Their Roles and Responsibilities Safely, Efficiently, and Effectively During Prevention, Protection, Mitigation, Response, and Recovery**

To achieve national health security, staff, volunteers, and the agencies and organizations they serve must understand and perform their specific roles and responsibilities to prevent, protect against, mitigate, respond to, and recover from incidents with potentially negative health consequences. Cross-training enables workers to perform a variety of possible functions as dictated by community needs, particularly during an incident, and helps foster a general culture of adaptability and flexibility. Furthermore, each worker must function within a larger, coordinated response context—in accordance with the National Incident Management System (NIMS). Effective incident response requires workers who are not only trained to fill predetermined roles but who can also serve in additional roles and in different locations, as required by evolving conditions.

The following activities will be undertaken in support of this outcome:

- **2.1.1 ASPR will work with partners to prioritize and develop examples of competency-based knowledge and skills that could be included in job descriptions for public health, health care, behavioral health, and other national health security personnel and interprofessional health and supporting teams (e.g., physicians, nurses, behavioral health care providers, allied health professionals, EMS providers, emergency planners, public health emergency logisticians, security providers, communication specialists, epidemiologists, and veterinarians). (Potential Partners: CDC, DHS, U.S. Department of Transportation [DOT]/National Highway Traffic Safety Administration [NHTSA], HRSA; local, state, territorial, and tribal agencies, private sector employers, professional organizations.)**

- **2.1.2 ASPR, CDC, DHS, and USDA will adhere to and advise partners on adhering to NIMS compliance training requirements in accordance with prescribed roles and functions within the incident management framework during an exercise or real incident. (Potential Partners: DOT/NHTSA, FDA, HRSA, OASH; local, state, territorial, and tribal agencies.)**
- **2.1.3 CDC will provide guidance for training staff and volunteers to serve in a variety of public-health-related national health security roles based on the needs of the incident response. (Potential Partners: HRSA, DHS, DOT/NHTSA; local, state, territorial, and tribal agencies; private sector.)**

## **2.2 Staff and Volunteers Have Received Competency-Based National Health Security Training**

National health security relies on the knowledge and skills of the workforce from all sectors. Workers must receive strong initial training and subsequent skill-building opportunities. A broad training framework that articulates professional roles and competencies for national health security and offers training and career development paths will help ensure current and future proficient and effective workers. While there is general agreement that curricula should be competency-based, there is less agreement on what those competencies are, how they correspond to professional readiness and vary by discipline, and how those competencies should be aligned with operational capabilities. Credentialing;<sup>14</sup> adherence to established training design and development of standards, requirements, and guidelines; and better integration of training activities are all necessary.

The following activities will be undertaken in support of this outcome. While all disciplines are important, some of the activities described below focus specifically on public health and health care personnel.

- **2.2.1 ASPR and DOD will continue leading the Federal Education and Training Interagency Group (FETIG), which is responsible for coordinating the implementation of applicable laws and executive directives related to core competencies and education and training standards, as directed by the Homeland Security Presidential Directive on Public Health and Medical Preparedness, and the Pandemic and All Hazards Preparedness Act (PAHPA).<sup>15</sup> The FETIG provides advice to the National Center for Disaster Medicine and Public Health (NCDMPH) housed by the Uniformed Services University of the Health Sciences. The NCDMPH leads federal and coordinates national efforts to develop and propagate core**

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<sup>14</sup> According to the NIMS and companion guidance, such as the *National Incident Management System: Guideline for the Credentialing of Personnel* and the *National Incident Management System: Training Program*, the credentialing process entails the objective evaluation and documentation of an individual's current certification, license, or degree; training and experience; and competence or proficiency to meet nationally accepted standards, provide particular services and/or functions, or perform specific tasks under specific conditions during an incident. Health professions have taken various approaches to credentialing that include licensing (for physicians and nurses), certification (for health education specialists), and registration (for dietitians and sanitarians). In addition, there are also a wide range of specialty certifications—credentials that identify those who have mastered some subset of knowledge and skills as demonstrated by a combination of study and examination. See K. Gebbie and B. Turnock, "The Public Health Workforce: New Challenges," *Health Affairs*, Vol. 25, No. 4, 2006, pp. 923–933.

<sup>15</sup> Department of Homeland Security, "Homeland Security Presidential Directive 21: Public Health and Medical Preparedness," October 18, 2007; Public Law No. 109-417, Pandemic and All-Hazards Preparedness Act, December 19, 2006.

curricula, education, training, and research in all-hazards disaster health. (Potential Partners: DHS, Department of Veterans Affairs [VA], DOT/NHTSA, USDA, Department of State [DOS], Department of Education [DoED], Department of Labor [DOL].)

- **2.2.2 ASPR, CDC, DHS, and NCDMPH will continue ongoing partnerships with colleges, universities, and employers to identify and assess existing national health security–related courses and learning opportunities for staff and volunteers, identify priorities for new or improved courses and opportunities, and develop standards to guide future efforts. (Potential Partners: DOD, DOEd, DOT/NHTSA, HRSA, OASH, ONC, VA, USDA; private sector; academia.)**
- **2.2.3 ASPR, HRSA, DHS, and NCDMPH will synthesize existing data from research and other sources to generate national health security competencies and will develop new methods as needed to identify core national health security competencies that are common across functional roles for all members of the national health security workforce. (Potential Partners: ACF, ASPE, CDC, DOD, DOL, DOT/NHTSA, Environmental Protection Agency [EPA], OASH, OCR, SAMHSA, USDA, VA,; governmental associations; professional associations; academia.)**
- **2.2.4 ASPR, CDC, and DHS will adapt training to align with and support mastery of national health security competencies as they are developed. (Potential Partners: DOT/NHTSA, HRSA, NCDMPH, Office of Security and Strategic Information [OSSI]; local, state, territorial, and tribal governments; professional associations; academia.)**
- **2.2.5 ASPR, CDC, DHS, and HRSA will deliver and disseminate existing and to-be-developed competency-based training. (Potential Partners: DOT/NHTSA, NCDMPH; professional associations, academia.)**
  - Partner with relevant federal agencies and academic programs and organizations to offer competency-based training and education, including crisis leadership and cultural competency training as appropriate, to the national health security workforce.
  - Encourage the provision of continuing education credits for all relevant disciplines as an incentive to increase participation in national health security–related training.
- **2.2.6 DHS will review existing learning management systems and assess the feasibility of creating an integrated and coordinated system. (Potential Partners: Agency for Healthcare Research and Quality [AHRQ], ASPR, CDC, DOD, DOEd, DOT/NHTSA, NCDMPH, ONC; professional associations; academia.)**
  - To the extent possible, training should be made available online, especially for programs targeted toward practicing health care and public health providers.

### **2.3 Communities Have an Adequate Number of Staff and Volunteers to Provide National Health Security Capabilities, and Can Access and Mobilize Additional Personnel as Needed**

An adequate supply of workers is needed to address all aspects of national health security, from prevention and protection to mitigation, response, and recovery. During an incident, these

workers might be expected to provide a national health security capability while maintaining essential functions unrelated to the incident. The evolving circumstances associated with an incident might require workers with diverse skills and abilities not typically associated with core health capacities. Awareness of the geographic distribution of staff and volunteers and their relevant skill sets is also necessary for coordination during incidents.

Given the predicted shortages of workers in such core health capacities as public health, nursing, epidemiology, human services, and laboratory sciences, ongoing recruitment and retention strategies (when feasible) are critical to ensure that there is a sufficient supply of qualified workers to meet daily and surge demands for services. Barriers to recruiting, hiring, and retaining qualified staff include significant resource constraints among the health system and agencies, uncompetitive salaries, and lengthy processing times for new hires. While efforts to bolster national health security should build on broad efforts to increase the number of fields and disciplines it utilizes, they should not supplant or wholly address those broad initiatives. For example, efforts can include offering opportunities for health security training and raising awareness among primary care physicians; however, they should not overreach, such as by trying to increase the overall supply of primary care physicians in the United States. Many individuals and employers remain unaware of their community's need for volunteers with diverse health care backgrounds and experience.

Efforts are essential to recruit a workforce (both paid staff and volunteers) that reflects the diverse demographic composition of the Nation. Understanding and respect for this diversity and the underlying factors that influence health (e.g., age, social and physical environments, economic status, genetic predispositions, behaviors, and access to health care),<sup>16</sup> especially language concordance and literacy, are critical to the development of national health security capabilities. The workforce should be linguistically, culturally, developmentally (e.g., serving children), and economically sensitive to, and ideally drawn from, the communities it serves.

The following activities will be undertaken in support of this outcome:

- **2.3.1 ASPR and OASH will identify the nature and scope of potential concerns from workers hesitant to serve during an incident and will develop a plan to begin to address these concerns. (Potential Partners: CDC, DHS, DOT/NHTSA, HRSA, OSG; professional associations.)**
- **2.3.2 ASPR, CDC, DHS, and OASH will work with partners to continue to conduct or require regular call-down/notification and assembly drills to test staff and volunteer mobilization. (Potential Partners: HRSA, other federal agencies; local, state, territorial, tribal governments; professional associations.)**
- **2.3.3 CDC and HRSA will facilitate a partnership of federal agencies, and encourage nonfederal entities to partner with higher education institutions serving culturally diverse populations to recruit a diverse workforce to national health security–related fields. (Potential Partners: AHRQ, DOL, IHS, OCR, CFBNP; local, state, territorial and tribal governments; private sector; academia.)**

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<sup>16</sup> Centers for Disease Control and Prevention, “Ten Essential Public Health Services,” no date (accessed online May 12, 2011, at <http://www.cdc.gov/od/ocphp/nphpsp/essentialphservices.htm>).

- **2.3.4 ASPR and OASH should reinforce the use of the cultural competency web-based e-learning programs (e.g., HHS’s Think Cultural Health website<sup>17</sup>) for the national health security workforce. (Potential Partner: HRSA.)**

## **2.4 A Systematic Approach Is in Place to Coordinate and Manage Health Care Delivery Volunteers During an Incident**

During and after a large-scale incident with potentially negative health consequences, there is an acute need for significant numbers of volunteer workers, particularly health care and behavioral health professionals. Coordinated systems are necessary to recruit and roster (i.e., confirm identity, license, credential) volunteers pre-incident. Volunteer training programs and individual volunteers must be evaluated according to core competencies and standards, which have yet to be developed.

The following activity will be undertaken in support of this outcome:

- **2.4.1 ASPR and OASH will work with federal and nonfederal partners and employers to implement ongoing efforts to recruit and register volunteers. (Potential Partners: AHRQ, CDC, DHS, DOEd, DOI, DOL, DOT, HRSA, IHS, CFBNP; local, state, territorial, and tribal governments; private sector; academia; national membership organizations.)**
  - Promote volunteerism and existing opportunities to volunteer.
  - Review and evaluate the effectiveness of Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP), other federal programs (e.g., Medical Reserve Corps [MRC], National Animal Health Emergency Response Corps [NAHERC]), and other volunteer programs; consider opportunities to eliminate redundancy in some of the federal programs that share the same outcomes.
  - Pursue collaborative partnerships with professional training programs and national membership organizations to encourage their members to volunteer at local and state levels.
  - Engage hospitals, national and state associations, and private organizations in state ESAR-VHP planning efforts.
  - Build collaborative partnerships with state licensing and credentialing bodies to share licensing and credentialing data and encourage reciprocity of licensing.
  - Encourage physicians and other health professionals to volunteer through various outreach activities and communications strategies.

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<sup>17</sup> <http://www.thinkculturalhealth.hhs.gov>, accessed online on May 13, 2011.

### OBJECTIVE 3: ENSURE SITUATIONAL AWARENESS

Situational awareness (both domestic and beyond U.S. borders, as appropriate) involves capturing, analyzing, interpreting, reporting, and communicating data to inform decisionmaking in a continuous and timely cycle. Situational awareness requires coordinated information collection and reporting to create a common operating picture (COP) and to make projections about likely future developments. Situational awareness also helps identify resource gaps, with the goal of matching available resources and identifying additional resources to meet current needs. Ongoing situational awareness provides the foundation for the successful detection, validation, and mitigation of emerging threats and supports more informed decisionmaking, better use of resources, and better outcomes.

While significant progress has been made in developing the specific capabilities that support situational awareness, there is a need and an opportunity for the federal government to assume a stronger role in developing and building consensus around a common national approach to situational awareness for national health security. This approach should:

- be based on participatory leadership and shared responsibility
- include a set of concepts, principles, terminology, expectations, and components as well as a minimum set of data elements and technological specifications
- respect Fair Information Practice Principles (FIPP).

A common national approach to situational awareness for national health security would provide the Nation with enhanced knowledge on the health of the public during and after an incident by generating timely information on existing and emerging medical threats and health-related trends during all phases of a response so that, when warranted, response plans can be adjusted on a real-time basis. A common national approach would also provide the ability to conduct situational awareness on health-related issues, including behavioral health where appropriate, within the immediate and surrounding areas affected by the incident; provide appropriate and timely access to relevant health related information; identify personnel exposed to CBRNE and occupational/environmental hazards; provide information to appropriate leadership to ensure that exposed personnel can be located, informed, and treated; and allow the real-time adjustment of response plans.

It is also important to create a collaborative culture for national health security by defining operational and response awareness (including horizontal and vertical interconnectivity among sectors and levels of government as well as the matrices required to match assets to capabilities and critical tasks to functions) as required to prevent, protect against, mitigate, respond to, and recover from large-scale incidents with potentially negative health consequences. A situational awareness system needs to provide useful information for decisions to meet the mission, recognize threats, control resources, and measure actions, with the ultimate goal of reducing the number of casualties. Science-based and surveillance-focused situational awareness is also useful for the systematic early warning, characterization, management, and control of CBRNE and other manmade and natural threats.

In some instances, existing data streams to support national health security are disparate, require intensive human effort, and are not easily aggregated to support the efficient and effective analysis needed for a response, particularly one that requires recommendations be provided to key decisionmakers in a timely manner. Furthermore, effective situational awareness does not rely solely on the capacity of information technology systems, but also on a robust understanding of the health information universe (e.g., public health, laboratory data, health care, public safety, pre-hospital emergency care, hospital care, rehabilitation, efficacy of countermeasures) to enable integrated supervision and execution of actions before, during, and after an incident.

The following list represents the desired four-year outcomes that together will ensure situational awareness. The activities listed under each outcome below will be initiated, subject to availability of resources, to help achieve these outcomes. The outcomes are separated out for discussion, but their interdependencies suggest that they could easily be considered parts of a single, overarching outcome. The first outcome, a common, long-term national approach to achieving situational awareness, will lay the foundation for the outcomes, as well as their respective activities, and hence should be a priority. The other desired outcomes should build off of and benefit from this common approach. Within these outcomes, priority activities include establishing a governance structure, identifying barriers to a common national approach, and developing a taxonomy of decisions and decisionmakers, which can provide the basis for identifying who needs what information and for what purposes. Awareness of evolving incidents with potentially negative health consequences has received the most attention to date, but there are still major gaps and a need to improve coordination across the many components of situational awareness. Awareness of resource availability and coordination of situational awareness also offer specific opportunities for improvement that build on the common national approach.

<b>Four-Year Outcomes for Ensuring Situational Awareness</b>
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| <ul style="list-style-type: none"> <li>• Common national approach to public health and health care situational awareness for national health security</li> <li>• Near-real-time awareness of evolving incidents with potentially negative health consequences, including source, scope, location, key unknowns, risk assessment, triggers linking information to response timelines, and projection of future trends, including integration of public information and concerns into situational awareness</li> <li>• Near-real-time awareness of availability and location of resources (both personnel and other) before and during incidents with potentially negative health consequences, including both awareness of the current situation and projection of needs and anticipation of shortfalls</li> <li>• Effective coordination of health-related situational awareness, including scalability from local to national levels, with communication running multi-directionally and involving both the public and private sectors, as well as both the United States and international partners</li> </ul> |
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### 3.1 Common National Approach to Public Health and Health Care Situational Awareness for National Health Security

Coordinating situational awareness on a national scale requires a shared *conceptual* approach, including common terminology, definitions, expectations, and processes and a minimal set of critical data. Given that biosurveillance is a fundamental part of achieving situational awareness, the approach should draw and build (although not exclusively) on the *National Biosurveillance Strategy for Human Health (NBSHH)*<sup>18</sup> and its Concept Plan for Implementation,<sup>19</sup> as well as the existing frameworks presented in the National Response Framework,<sup>20</sup> the National Incident Management System,<sup>21</sup> the National Biosurveillance Integration System, and National Biosurveillance Advisory Subcommittee reports.<sup>22</sup> While biosurveillance, as a capability, is one key component of situational awareness, the Nation should consider the many National Response Framework capabilities—which, collectively, are conducive to envisioning a common operating picture. Specifically, it is important to consider those core functional areas of responsibility contained in the Emergency Support Function #8 Annex (Public Health and Medical) and those newly incorporated areas within the NHSS.

Consideration of the types of decisions that need to be supported will be important, as will determining who makes key decisions, determining the role of communications in discerning and disseminating information, determining what data are needed and how these data will be used to support decisionmaking, and determining who needs what information at every level of government. An information management plan, as well as other policies and memoranda of understanding regarding data-sharing and interpretation among organizations, would provide the methods and processes for collecting and managing information. Both privacy and security should be considered in development of any information management plan, and, at a minimum, the Privacy Act of 1974 should be considered, as well as other relevant law. In addition, this plan would describe the information flow and exchanges between organizations, detail data security procedures, outline roles and responsibilities, and include methods for protecting the privacy of health information. Finally, the plan would specify the products to be used to capture and disseminate information as well as how best to enable infrastructure and tools for interoperability.

Near-real-time awareness of an incident and available resources, in turn, rely on low- and high-technology systems for sharing situational awareness information; these systems must be

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<sup>18</sup> Centers for Disease Control and Prevention, *National Biosurveillance Strategy for Human Health (NBSHH)*, Version 2.0, February 2010 (accessed online May 12, 2011, at [http://www.cdc.gov/osels/pdf/NBSHH\\_V2\\_FINAL.PDF](http://www.cdc.gov/osels/pdf/NBSHH_V2_FINAL.PDF)).

<sup>19</sup> Centers for Disease Control and Prevention, *Concept Plan for Implementation of the National Biosurveillance Strategy for Human Health*, January 2010 (accessed online May 12, 2011, at [http://www.cdc.gov/osels/pdf/Concept\\_Plan\\_V1+5+final+for+print+KMD.PDF](http://www.cdc.gov/osels/pdf/Concept_Plan_V1+5+final+for+print+KMD.PDF)).

<sup>20</sup> U.S. Department of Homeland Security, *National Response Framework*, January 2008 (accessed online May 12, 2011, at <http://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf>).

<sup>21</sup> U.S. Department of Homeland Security, *National Incident Management System*, December 2008 (accessed online May 12, 2011, at [http://www.fema.gov/pdf/emergency/nims/NIMS\\_core.pdf](http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf)).

<sup>22</sup> National Biosurveillance Advisory Subcommittee, *Improving the Nation's Ability to Detect and Respond to 21st Century Urgent Health Threats: First Report of the National Biosurveillance Advisory Subcommittee*, October 2009, ; and *Improving the Nation's Ability to Detect and Respond to 21st Century Urgent Health Threats: Second Report of the National Biosurveillance Advisory Subcommittee*, June 2011.

interoperable, redundant, and reliable. Federal leadership will be critical to ensuring coordination at both the conceptual and technological levels, while also ensuring participation and buy-in from a broad range of stakeholders, since most incidents begin and end at the local level. However, improvements need to be made in developing an overarching public health and medical organizational structure and/or governance model relevant to national health security in order to ensure such coordination. These governance and/or organizational structure models are needed to ensure consistent management, coherent policies and processes, and broad stakeholder involvement. In particular, the heightened privacy concerns of some populations must be considered, and the potentially negative consequences of aggressive data collection, especially with respect to its effect on individuals' willingness to seek health care or to harm their privacy, must be acknowledged and mitigated.

A common national approach needs to establish *minimum* expectations, while limiting the burden that might be imposed on various stakeholders from a resource standpoint. Consideration should be given to how frequently specific information will be needed in routine and incident-related operations and to the use of minimum necessary requirements (e.g., some information may not be needed on a day-to-day basis, and only the minimum amount of data necessary for the purpose should be shared). This will enable balancing of the benefits of obtaining the information against the cost in dollars and the effort required to collect the information, as well as against the significant privacy and operational security concerns related to collecting and integrating individually identifiable health information. Additionally, attention should be paid to ensuring that current and future grants align with the approach, where possible, rather than creating competing incentives.

The following activities will be undertaken in support of this outcome. Most of these need to be done sequentially, because one activity often builds on previous ones.

- **3.1.1 ASPR will work with partners to establish a governance and/or organizational structure model (which conforms to Health Insurance Portability and Accountability Act [HIPAA] requirements) for public health and health care situational awareness activities in support of national health security. (Potential Partners: CDC, DHS, DOD, DOI, Department of Justice [DOJ], EPA, Food and Drug Administration [FDA], OCR, ONC, USDA, VA; local, state, territorial, and tribal governments; private sector; academia; relevant discipline associations.)**
- **3.1.2 ASPR, CDC, and DHS will work with partners to identify and address legal and policy barriers to establishing a common conceptual approach to situational awareness, building on existing efforts. (Potential Partners: Assistant Secretary for Legislation [ASL], DOD, DOJ, IHS, OGC; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; academia; training centers.)**
- **3.1.3 ASPR, CDC, and DHS, will work with partners to identify and address issues regarding local, state, territorial, tribal, and federal legal and policy barriers to releasing and sharing data, including who has authority to release data, what the barriers are to exchanging data, and what the approval time is for release, and to ensure that actions taken to address these barriers are consistent with requirements for protecting patient information. (Potential Partners: ASL, DOD, DOJ, DOS, IHS,**

**OCR, OGC, ONC; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; academia; training centers.)**

- **3.1.4 ASPR and DHS will work with partners to develop a taxonomy of decisions and decisionmakers (authority, sectors, levels of government) to assist in identifying who needs what information (and for what purposes), possibly as part of an information management plan. (Potential Partners: CDC, DOD, DOI, DOJ, DOS, ONC, SAMHSA; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; training centers.)**
- **3.1.5 ASPR and CDC will work with partners to assess the establishment of a consortium of local, state, territorial, and tribal health departments to compile and evaluate a suite of low-cost, easy-to-implement, innovative practices that allow public health authorities to collect and analyze data relevant to national health security. (Potential Partners: DHS, DOJ, DOS, FDA, OGC; local, state, territorial, and tribal officials; nongovernmental organizations; private sector; academia and research centers; training centers.)**
  - Practices may be grouped into modules, potentially including health status of the community, inventory and readiness status of local response assets, detection of potential and emerging incidents, threat-specific surge in active surveillance, and pre- and post-event situation reports.
- **3.1.6 ASPR, CDC, and DHS, in consultation with stakeholders across all sectors, will draft a novel conceptual and technological approach, which will provide clear and consistent expectations for a situational awareness system, possibly through a set of guiding definitions and principles. (Potential Partners: DOD, DOT, ONC, Office of Science and Technology Policy [OSTP]; local, state, territorial, and tribal officials; nongovernmental organizations; private sector; academia and research centers; training centers.)**
  - As a means of facilitating and prioritizing evaluations, relevant departments and agencies should assess the resources needed to implement a conceptual approach by inventorying existing systems, tools, registries, collaborations, and programs and evaluating their effectiveness and appropriateness for a national situational awareness approach that will help develop minimum sets of data elements. This may be accomplished by identifying and promoting innovative practices related to health information systems and/or public health situational awareness systems and infrastructure, which will serve as a basis for future funding decisions by identifying gaps and helping to avoid assets and infrastructure duplication.
  - Develop minimum sets of data elements that apply across all threats but that can also be augmented for specific incidents. This will require consideration of stakeholders, their functional relationships, and their responsibilities, because functions and tasks will determine data requirements.
  - Identify and align the common conceptual approach with relevant guidance and funding sources, and, where necessary and possible, coordinate policies and resources that support the common conceptual approach (e.g., HHS, DHS, DOD, VA, DOT, and other federal resources, as appropriate).

- Act on the existing knowledge base of barriers to public health information systems (e.g., electronic laboratory reporting and electronic health record [EHR] and laboratory information system [LIS] interface issues) to support development and maintenance of, and adequate staffing for these vital systems.
- **3.1.7 ASPR and DHS will work with partners to draft a conceptual and technological approach for the processing and communicating of data and information for utilization. (Potential Partners: CDC, DOD, OCR, ONC, OSTP; local, state, territorial, and tribal governments.)**
  - Determine existing data integration methods to enhance situational awareness and develop a research agenda.
  - Assess new and emerging technology for use in the field of public health situational awareness.
  - Assess the utility of data integration as a requirement to improve decisionmaking.
  - Ensure consistency with HIPAA Privacy and Security rules and FIPPs when developing conceptual and technological approaches to creating a situational awareness system.

### **3.2 Near-Real-Time Awareness of Evolving Incidents with Potentially Negative Health Consequences**

The ability to respond quickly and effectively to an incident requires responders and decisionmakers to have immediate access to essential information about the incident. The type of information required will vary based on the nature of the incident (e.g., bioterrorism, hurricane, outbreak of pandemic influenza). However, it is critical to have local, state, territorial, tribal, and federal government and private partnerships and systems set up and coordinated before an incident to ensure that information can be captured, processed, and disseminated before, during, and after the incident.

The following activities will be undertaken in support of this outcome:

- **3.2.1 ASPR, CDC, and DHS will work with partners to build on existing situational awareness resources in all sectors by identifying existing capabilities across all relevant sources of information that can be used to generate actionable information. (Potential Partners: DOD, DOI, DOJ, DOT, FDA, the Office of the Director of National Intelligence [ODNI], ONC, OSTP, USDA, VA; local, state, territorial, and tribal governments.) The following are illustrative examples:**
  - Begin to identify targeted research and development knowledge gaps for situational awareness and prioritize research activities which will further the Nation's ability to develop and enhance methods to identify, track, and respond to health threats (e.g., CBRNE laboratory and microbial forensics methods).
  - Apply existing Geographic Information Systems (GIS) (e.g., geospatial, demographic, and related geodata integration and presentation systems), communication information systems (e.g., data visualization, web technology, relational data systems, and integrated data management) and public health

- information systems (e.g., public health modeling, poison centers, laboratory and clinical interfaces, analysis, data sharing, and tracking systems) for use in understanding and responding to evolving incidents.
- Develop “resource typing” for health incidents logistics and supply chain purposes using standards developed under the Incident Command System (ICS) to facilitate improved resource allocation based on supply and demand and information-sharing to support an enriched user-defined common operating picture.
  - Develop approaches for leveraging social networking data.
  - **3.2.2 ASPR, CDC, and DHS will work with partners to identify ways to strengthen and expand existing capabilities to disseminate and share national health security information quickly to the maximum extent practicable given operation security requirements. (Potential Partners: DHS, DOD, DOI, DOJ, DOT, EPA, HRSA, OCR, ONC, USDA; local, state, territorial, and tribal governments; academia and research centers; training centers.)**
    - Develop approaches for interfacing with existing electronic information systems across all levels, classifications, and sectors to include, but not limited to:
      - addressing the need to link records across systems
      - ensuring consistency with HIPAA Privacy and Security rules and Fair Information Practice Principles (FIPPs) when developing all conceptual and technological approaches for processing and communicating health information
      - linking public health laboratories to state health information exchanges to send and receive laboratory results
      - providing public health laboratories access to common information systems (e.g., a Laboratory Information Management System [LIMS]) to send and receive laboratory test orders and results.
    - Develop approaches, electronic laboratory reporting standards, and, potentially, protocols and agreements to increase the timeliness of information-sharing to the maximum extent practicable given operational security requirements; incorporate operational tempos for incident-related situational awareness based on common systems that are used in routine operations.
    - Support existing and developing incentive programs for adopting common electronic information systems across all levels and sectors to the extent practicable given operational security requirements.
    - Develop a capability to integrate and analyze, taking into account privacy concerns, operational security concerns, relevant data available from the web, proprietary data sources, external data sources, and internal documents in order to support evidence-based decisionmaking; establish core knowledge collection, management, and fusion capability; and identify indicators and warnings of events of public health significance.

- This data store would be mined using modern business analytical tools to make connections between disparate data, generate trends, and forecast emerging issues.

### **3.3 Near-Real-Time Awareness of Availability and Location of Resources Before and During Incidents with Potentially Negative Health Consequences**

Awareness of available resources (e.g., personnel, facilities, equipment, and supplies, particularly for children and at-risk individuals) includes not just those needed for the current situation, but also a projection of future resource needs and anticipation of resource shortfalls. The ability to respond quickly and effectively to a large-scale incident with potentially negative health consequences requires responders and decisionmakers to have immediate access to essential resource information. Resource awareness requires a level of timeliness not available in many current resource-tracking systems, which are often best used retrospectively. Interoperability among existing systems is limited, especially across different levels and sectors. Furthermore, private interests control many assets that are needed before, during, and after incidents, and proprietary interests can pose a significant barrier to timely, accurate, and effective resource awareness. Careful thought needs to be given to situations in which business considerations (e.g., competitor awareness of existing inventories) may conflict with the needs of national health security and incident response.

The following activities will be undertaken in support of this outcome:

- **3.3.1 ASPR will work with partners to identify and, where necessary and possible, explore aligning existing local, state, territorial, tribal, federal, and international governmental and nongovernmental systems across sectors, for providing awareness of resources before, during, and after an incident. (Potential Partners: CDC, DOI, EPA, FDA, HRSA, OCR, ONC, OSTP, USDA; local, state, territorial, and tribal governments; nongovernmental organizations; hospitals and health care providers; training centers.)**
  - Determine a methodology to inventory and evaluate public health and health care resource awareness systems (e.g., available hospital beds, countermeasure reporting, vaccine distribution) that may be in use during future emergency incidents. This focused assessment will allow for learning what worked and what did not and will generate ideas for how to improve and modify these systems for use in variety of incidents (e.g., terrorist attack, natural disaster).
  - Identify gaps in existing information networks (both organizational and electronic).
  - Ensure consistency with HIPAA Privacy and Security rules and FIPPs when integrating health information when developing the capability for integrating and analyzing relevant data.
- **3.3.2 ASPR, CDC and DHS will work with partners to develop and/or implement an integrated resource tracking strategy that works across sectors and capitalizes on existing resources, including identifying a minimal set of resource data that would be relevant and helpful among incident types and scenarios. (Potential Partners: EPA, ONC, OSTP, USDA; local, state, territorial, and tribal governments;**

nongovernmental organizations; hospitals and health care providers; academia and research centers; training centers.)

- **3.3.3** **ONC will work with partners to identify and consider proprietary interests (e.g., for hospitals, the pharmaceutical industry, large nationwide laboratories) that may inhibit incorporation of private resources, including approaches for carefully controlled data sharing and maintaining confidentiality of information. (Potential Partners: ASPR, CDC, DHS, DOJ, FDA, OGC; private industry associations.)**
- **3.3.4** **ASPR and DHS will work with partners, including private industry, to identify sources of data and information for sharing and potentially for integration to improve situational awareness. (Potential Partners: CDC, DHS, DOJ, FDA, OGC, ONC; private industry associations.)**

### **3.4 Effective Coordination of Health-Related Situational Awareness**

Coordination among stakeholders is critical to ensuring accurate, timely, and resilient situational awareness. Each stakeholder brings to the incident his or her own set of skills, terminology, goals, understanding of responsibilities, and expectations. Effective coordination should build on a set of common guidance and tools, such as that provided by a common national approach, and make use of near real-time information about the characteristics of the evolving incident and the resources available to respond to the incident. The ability to effectively coordinate should increase with improvement in those other outcomes. Effective coordination must occur within and between the public and private sectors, from local to national levels (with information flowing in both directions and laterally), and between the United States and other countries. The extent and limits of coordination must be evident to all involved.

The following activities will be undertaken in support of this outcome:

- **3.4.1** **ASPR, CDC, and DHS will explore how state and major urban area fusion centers can enhance information sharing and situational awareness across the public safety, public health, emergency management, and other domains. (Potential Partners: DOJ; local, state, territorial, and tribal governments.)**
- **3.4.2** **ASPR and CDC will involve private and children's hospitals, laboratories, schools (to provide absenteeism data), 9-1-1 systems, EMS, medical countermeasures adverse events systems, behavioral health care systems, and other organizations in local, state, territorial, tribal, and federal data-sharing and planning efforts for integrated situational awareness, and will encourage use of these systems as they become available. (Potential Partners: DHS, FDA, HRSA, Office of Global Affairs [OGA], ONC; local, state, territorial, and tribal governments; nongovernmental organizations; hospitals and health care providers; research centers.)**
- **3.4.3** **ASPR and CDC will work with partners to support a collaborative environment for sharing situational awareness information. (Potential Partners: DHS, DOD, DOS, EPA, HRSA, OGA, USDA; local, state, territorial, and tribal governments; nongovernmental organizations; hospitals and health care providers; research centers.)**

- As supported by law, identify potential multiple funding sources to support the creation and maintenance of this infrastructure.
- Establish a collaborative and/or contractual mechanism (which may or may not include memoranda of understanding) for participation and information-sharing.
- Incorporate the role of health information exchanges and laboratory information exchanges in situational awareness related to national health security.
- Explore the business case for hospital/clinical participation in situational awareness systems.

## OBJECTIVE 4: FOSTER INTEGRATED, SCALABLE HEALTH CARE DELIVERY SYSTEMS

The delivery of health care in the United States involves a large and complex network of private, public, and governmental organizations that provide a wide array of health care services.<sup>23</sup> Every day, Americans rely on myriad services to maintain health, treat illness and injury, and improve their lives. The providers, professionals, organizations, and systems that deliver care typically function in an environment where networks form in response to varied market demand within the community. Under normal, day-to-day operations, these loosely connected networks strive to meet the needs of their community population. In some communities (especially urban and rural communities), parts of the health care system (especially primary, emergency, and behavioral health care) are under considerable strain and experience regular access and crowding challenges.

Health care system resiliency is the ability of the system to maintain operations even in the face of a large-scale incident with potentially negative health consequences. Health care systems can increase the ability to mitigate, respond to, and recover from such events by fostering integrated, scalable health care delivery systems.<sup>24</sup> The first step in fostering health care resiliency is the ability of individual health care organizations<sup>25</sup> to *surge* for short periods of time when challenged by short-term and modest increases in demand, i.e., to maintain the standard of care while responding to fluctuations in demand.

Disasters and public health emergencies can result in large numbers of individuals who need care within a short period of time. In these cases, the demand for health care services may exceed an individual health care facility's ability to safely surge. To address the public's health needs in the face of a large-scale incident, separate and independent health care organizations that do not normally work together may be thrust into a situation in which they must collaborate. Not only must these organizations meet the increased health and behavioral health care needs resulting from the incident, they must also continue to address the functional needs of at-risk individuals<sup>26</sup> within the community. Meeting this level of demand requires the coordinated effort of all health care resources in a community. By working together, health care organizations can provide capacity well in excess of the sum of the individual efforts of the same organizations working on their own.<sup>27</sup>

Preparing health care organizations to function as a coordinated and effective system requires planning, coordination, and experience of the sort gained through past incidents and exercises.

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<sup>23</sup> The health care system includes public health, primary and hospital care, disaster medicine, and behavioral health care.

<sup>24</sup> James Carafano, "Resiliency and Public-Private Partnerships to Enhance Homeland Security," The Heritage Foundation, June 24, 2008 (accessed online May 13, 2011, at <http://www.heritage.org/Research/Reports/2008/06/Resiliency-and-Public-Private-Partnerships-to-Enhance-Homeland-Security>).

<sup>25</sup> A health care organization is any entity that provides health care or patient care, including but not limited to a private physician's office, dental office, hospital, long-term care facility, alternative treatment facility, dialysis or other outpatient treatment center, EMS, clinic, and community health center.

<sup>26</sup> As defined by U.S. Department of Health and Human Services, "At-Risk Individuals," 2012.

<sup>27</sup> A. Knebel and S. Phillips, "National Strategy for Health Care System Preparedness," *Disaster Medicine and Public Health Preparedness*, Vol. 3, Suppl. 1, 2009, p. S4.

Each part of the health care delivery system must be aware of its role in meeting the community's demands for services during a major incident. The capacity and capability of individual health care organizations and communities can vary significantly due to differences in local and state laws and regulations, the level of planning, geographical diversity, market competition among private health care organizations, the availability of medical resources, and the culture of the individual organization. Given this potential for variation, a community is better served by informed health care organizations that are aware of and actively engaged in identifying and working to overcome potential barriers to ensuring the continuity of health services within their communities.

One strategy for enhancing medical surge capacity and capability at the community level is the formation of a **health care coalition**.<sup>28</sup> A health care coalition is a group of health care organizations working together to collectively leverage resources, thus increasing capacity beyond the sum of the coalition's parts. Health care coalitions within communities and across all levels of government can facilitate integration and are thus critical for strengthening the health care delivery system and supporting national health security.<sup>29</sup> Successful coalitions integrate health care organizations from across the health care continuum<sup>30</sup> and across distinct sectors, such as medical care, disaster behavioral health,<sup>31</sup> public health, dental care, emergency management, law enforcement, EMS, and others. Coalitions bring together multiple organizations while also acknowledging the important role that individual organizations and other response partners play in national health security. Coalitions are especially important for engaging organizations that have not traditionally been involved in national health security activities (e.g., primary care physician's offices, patient-centered medical homes, outpatient clinics, dialysis centers, home health care agencies, federal qualified health centers, nursing home facilities, dental and behavioral health).

Creating the type of integration required for a health care coalition may be challenging due to the number of organizations involved, differences in concerns and interests across organizations, and the absence of a single organization with responsibility for the system as a whole. However, the diversity of critical functions that these organizations fulfill is important and successful coalition-building contributes to national health security.

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<sup>28</sup> A health care coalition organizes individual health care assets into a single functional unit. A coalition may include hospitals, long-term care or alternative treatment facilities, dialysis and other outpatient treatment centers, nursing homes and other skilled nursing facilities, private physician offices, behavioral health care, dental care, clinics, community health centers, and any other health care asset that may be brought to bear during major medical response. The health care coalition provides a central integration mechanism for cooperative planning, information-sharing, and management coordination among health care assets and also establishes a mechanism for integrating medical assets into the jurisdiction's incident command system.

<sup>29</sup> Eric Toner, Richard E. Waldhorn, Crystal Franco, Ann Norwood, Brooke Courtney, Kunal Rambhia, Matthew Watson, and Thomas V. Inglesby, *The Next Challenge in Healthcare Preparedness: Catastrophic Health Events*, Baltimore, Md.: Center for Biosecurity of UPMC, prepared for the U.S. Department of Health and Human Services, 2009.

<sup>30</sup> The "continuum of health care" includes but is not limited to 9-1-1 call centers/public safety answering points, EMS, emergency departments, hospitals, ambulatory care, physicians' offices, community health centers, specialized care (e.g., dialysis, laboratories, rehabilitation), behavioral health care, long-term care (e.g., nursing homes, assisted living), and home health care and services (e.g., nursing, meals).

<sup>31</sup> Disaster behavioral health is "the provision of mental health, substance abuse, and stress management services to disaster survivors and responders," U.S. Department of Health and Human Services, "At Risk Individuals, Behavioral Health, and Human Services Coordination," 2011 (accessed online May 13, 2011, at <http://www.phe.gov/Preparedness/planning/abc/Pages/default.aspx>).

When the magnitude of an incident exceeds the local community's ability to meet the demand, further increases in scale can be achieved by connecting health care coalitions within a region through a **regional emergency planning alliance**. Because each region is unique and comprises many communities, planning alliances establish a systematic process for integrating and coordinating local, state, territorial, tribal, and federal medical responses to support optimal surge capacity and capability while protecting patients, health care staff, and other health security workers.<sup>32</sup> Types of planning alliances include regional councils of government, economic development districts, local development districts, and metropolitan planning organizations.

Regional emergency planning alliances serve an important role in fostering relationships between health care coalitions, providers, and other emergency response partners within communities. The collaborative efforts, planning processes, and information management activities of planning alliances can be used to establish mutual aid agreements to support timely and appropriate integrated medical responses. An alliance's shared understanding of roles, functions, and community requirements can serve as a platform for ensuring the effective education of medical and emergency response workers (both paid staff and volunteers) and facilitating exercises on the community, state, and federal levels.

Health care coalitions and regional emergency planning alliances facilitate planning and preparation for incidents with potentially negative health consequences and can be beneficial to daily operations as well. The relationships that are developed among health care organizations may serve to better integrate routine services, identify community investment and infrastructure needs, improve health outcomes, and increase resilience.

In some cases, despite all attempts to increase health care capacity and capabilities, the magnitude of a public health emergency or disaster may exceed the resources (e.g., staff, supplies, facilities) available to a community or region affected by an incident. As resources become scarce, health care organizations, coalitions, and communities may need to temporarily shift from normal "standards of care" to **crisis standards of care**.<sup>33</sup> In these circumstances, difficult decisions will have to be made regarding the allocation of scarce resources within the impacted area. Creating ethical criteria as part of a framework and processes through which ethical decisions can be made is a necessary part of national health security. Developing such a framework requires the active engagement of health care providers, organizations, coalitions, and other partners to promote consistency while addressing the community's specific values, needs, and priorities.

Finally, as a public health emergency or disaster resolves and the demand for health care returns to normal levels, the community shifts its focus from response to recovery.

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<sup>32</sup> CNA Corporation, *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies*, prepared for the U.S. Department of Health and Human Services under Contract No. 233-03-0028, September 2007.

<sup>33</sup> Crisis standards of care may be implemented following "a substantial change in usual health care operations and the level of care it is possible to deliver, which is made necessary by a pervasive (e.g., pandemic influenza) or catastrophic (e.g., earthquake, hurricane) disaster." Institute of Medicine, *Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations: A Letter Report*, Washington, D.C.: The National Academies Press, 2009.

Advance planning by health care organizations and coalitions will facilitate the return to normal operations.

The following list represents the desired four-year outcomes that together will foster integrated, scalable health care delivery systems. The activities listed under each outcome will be initiated, subject to availability of resources, to support their achievement.

#### **Four-Year Outcomes for Fostering Integrated, Scalable Health Care Delivery Systems**

- Health care organizations are integrated with community medical, public health, behavioral health, human services, emergency management, public safety, and other partners and are able to respond to a rapid, temporary increase in demand.
- Local and state governments promote regional emergency planning alliances and health care coalitions that are prepared to respond and recover from incidents that exceed the capabilities of individual health care organizations.
- Local and state governments actively engage regional emergency planning alliances, health care coalitions and health care organizations to develop ethical processes for the allocation of scarce resources during or after an incident with potentially negative health consequences.
- Local and state governments actively engage regional emergency planning alliances, health care coalitions, and health care organizations to regularly exercise, measure, and report (in a standardized manner) their ability to surge during and after incidents.
- Barriers to health care integration are identified and solutions are promoted to enable health care organizations, health care coalitions, and regional emergency planning alliances to function effectively in the wake of an incident.

#### **4.1 Health Care Organizations Are Integrated with Community Medical, Public Health, Behavioral Health, Human Services, Emergency Management, Public Safety, and Other Partners and Are Able to Respond to a Rapid, Temporary Increase in Demand**

In a prepared health care delivery system, each health care organization must have the ability to increase its capacity quickly, at least to some extent, in response to an increase in demand for care. This includes *all* care delivery settings across the entire continuum of health care. Part of the strategy for surge will be facilitating the *most appropriate* level of safe and effective patient care, not necessarily the *highest* level of care available.

The ability of a health care organization to generate surge capacity to respond to and support recovery from a large-scale incident with potentially negative health consequences is built on a foundation of effective and efficient daily operations. Activities that improve daily operations, such as implementing an effective and interoperable health information technology system, also facilitate more effective emergency response. In addition, health care organizations can improve their surge capabilities by developing emergency response plans and exercising them on a regular basis. The lessons learned from these exercises, as well as from real incidents (e.g.,

Hurricane Katrina, Midwestern floods, 2009 H1N1 response), should be used to update and improve local, regional, state, and health care coalition emergency response plans.

The following activities will be undertaken in support of this outcome:

- **4.1.1 ASPR, CDC, the Centers for Medicare and Medicaid Services (CMS), SAMHSA, FDA, and HRSA will work with partners to develop and align surge goals. (Potential Partners: health care organizations [e.g., hospitals, primary care physicians, public and private EMS agencies, long-term-care centers, community health centers/federally qualified health centers], accreditation organizations, state licensing agencies.)**
- **4.1.2 ASPR, CDC, DHS, SAMHSA, FDA, and HRSA will work with partners to provide guidance, tools and templates for use by health care organizations to improve their surge capacity. (Potential Partners: health care organizations [e.g., hospitals, primary care physicians, public and private EMS agencies, long-term-care centers, community health centers/federally qualified health centers].)**
- **4.1.3 ASPR, CDC, CMS, FDA, and HRSA will work with partners to consider, address, or develop standards for surge capacity for health care organizations. (Potential Partners: AHRQ; professional and accreditation organizations, state licensing agencies.)**
- **4.1.4 ASPR, CDC, SAMHSA, DHS, and FDA will work with partners to align and enhance the role of health information technology and health information exchange in public health and medical emergency planning, response, and recovery activities (e.g., use of health information exchanges within the state to exchange lab results between provider systems and public health agencies). (Potential Partners: ONC; local, state, territorial, and tribal public health agencies; health care organizations.)**
- **4.1.5 ASPR, CDC, CMS, SAMHSA, FDA, DHS, and DOT/NHTSA will work with partners to develop strategies to facilitate the delivery of the most safe and effective level of care during an incident. (Potential Partners: AHRQ; local, state, territorial, and tribal public health agencies; health care organizations.)**
- **4.1.6 ACF, ASPR, CMS, and DHS will work with partners to explore appropriate payment options for services provided at alternate care sites during or after incidents. (Potential Partners: Other federal agencies; local, state, territorial, and tribal public health agencies.)**

## **4.2 Local and State Governments Promote Regional Emergency Planning Alliances and Health Care Coalitions That Are Prepared to Respond and Recover from Incidents that Exceed the Capabilities of Individual Health Care Organizations**

Incidents with potentially negative health consequences vary in duration and magnitude. In some cases, individual health care organizations are able to meet the demand for medical resources on their own. However, in other cases, it will be necessary to increase the scale of the response by collaboration and integration across a range of organizations. Health care coalitions or organizations may identify a need to modify service delivery (e.g., deferring elective care

procedures, discharges, referrals to outpatient care) to meet the increased demand. Successful implementation of these practices requires an integrated and coordinated response across local, regional, and state areas, as well as pre-established relationships and advance planning among health care organizations across critical infrastructure sectors<sup>34</sup> and with other types of non-health care organizations (e.g., pharmacies, professional associations, medical equipment vendors).

Effective coordination and integration result when all levels of government, regional emergency planning alliances, health care coalitions, and health care organizations understand their interdependent and integrated roles and how to quickly transition into and out of these roles over the course of an incident. Through exercises, each of these partners can collectively garner a greater awareness of how to integrate and identify potential gaps, redundancies, lessons, or opportunities for quality improvement. Specifically, health care coalitions and their ability to help foster integrated, scalable health care systems will be strengthened by exercises at the community level, metrics for measuring coalition effectiveness, and incorporation of lessons learned into normal operations so they can be accessed more easily during or after a large-scale incident.

The following activities will be undertaken in support of this outcome:

- **4.2.1 ASPR, CDC, DHS, DOT/NHTSA, and HRSA will work with partners to align public health and medical national health security activities using federal grants and cooperative agreements, when available, to emphasize community approaches to health care (e.g., health care coalitions) in ways that are consistent with Affordable Care Act efforts and that represent the entire health care continuum, as a strategy to improve national health security outcomes and promote surge capacity beyond that of any individual organization. (Potential Partners: DOI; local, state, territorial, and tribal public health and human services agencies; health care organizations.)**
- **4.2.2 ASPR, CDC, SAMHSA, DHS, and IHS will work with partners to ensure that their plans include consideration of at-risk individuals and maintenance of essential health care services for individuals requiring continuous health care outside of a hospital setting. (Potential Partners: DOI; local, state, territorial, and tribal governments.)**
- **4.2.3 ASPR, CDC, CMS, SAMHSA, HRSA, and IHS will work with partners to explore policy incentives that encourage health care organizations to participate in regional emergency planning alliances and health care coalitions. (Potential Partners: DOI; local, state, territorial, and tribal governments; professional organizations; nongovernmental organizations.)**
- **4.2.4 ASPR, CDC, CMS, SAMHSA, DHS, DOD, HRSA, and IHS will work with partners to promote exercises at the local, state, territorial, tribal, and federal**

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<sup>34</sup> *Critical infrastructure* refers to the “assets, systems, and networks, whether physical or virtual, so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, public health or safety, or any combination thereof” (U.S. Department of Homeland Security, “Critical Infrastructure,” 2010, accessed online May 13, 2011, at [http://www.dhs.gov/files/programs/gc\\_1189168948944.shtm](http://www.dhs.gov/files/programs/gc_1189168948944.shtm)).

**governmental and community levels and will encourage regional emergency planning alliance and health care coalition participation. (Potential Partners: DOI; local, state, territorial, and tribal governments; health care organizations and coalitions; health security planning alliances.)**

- **4.2.5 ASPR will work with partners through the critical infrastructure protection partnership framework to share information to the maximum extent practicable and identify issues for collaborative problem-solving. (Potential Partners: Other federal agencies; local, state, territorial, and tribal governments; private sector.)**

### **4.3 Local and State Governments Actively Engage Regional Emergency Planning Alliances, Health Care Coalitions, and Health Care Organizations to Develop Ethical Processes for the Allocation of Scarce Resources During or After an Incident with Potentially Negative Health Consequences**

In situations where the demand for medical care resources exceeds the capacity of the health care delivery system to meet each patient's needs at the level expected under normal circumstances, health care organizations and coalitions must be prepared to implement contingency plans to optimize resources. One of the key challenges is identifying the processes for temporarily shifting from normal day-to-day standards of care to crisis standards of care and back again.

Optimizing resource allocation during or after an incident requires an ethical and multifaceted approach that includes strategies to minimize less urgent demands for health care services in order to direct the supply of medical resources to those who require them most. The development and implementation of these strategies requires a multidisciplinary dialogue that balances multiple considerations, including but not limited to ethical, legal, and financial considerations and the functional needs of at-risk individuals. To ensure success, stakeholders in the health care provider community as well as the public must be actively engaged in the process of developing and implementing crisis standards of care.<sup>35</sup> This will allow a meaningful dialogue about values, priorities, and needs within the community.

Situations in which health care organizations allocate scarce resources in different ways create inequities and confusion. Therefore, the development and implementation of crisis standards of care requires coordination and dialogue among health care providers, organizations, coalitions, and private-sector partners. States and other partners need to ensure these standards are implemented consistently at the community level.

The following activities will be undertaken in support of this outcome:

- **4.3.1 ASPR, CDC, FDA, OASH, and IGA will work with partners to identify current efforts by states, academia, health care experts, biomedical ethicists, medico-legal experts, behavioral health experts, and others to develop frameworks and processes for allocating scarce resources during large-scale incidents. (Potential Partners: State government, health care experts, biomedical ethicists, medico-legal experts, academia and research centers.)**

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<sup>35</sup> Institute of Medicine, 2009; and Institute of Medicine, *Crisis Standards of Care: Summary of a Workshop Series*, Washington, D.C.: The National Academies Press, 2010.

- **4.3.2 ASPR, CDC, DHS, and HRSA will work with partners to foster the development of allocation of scarce resources frameworks and processes through federal grants and cooperative agreements. (Potential Partners: DOI; local, state, territorial, and tribal governments.)**

#### **4.4 Local and State Governments Actively Engage Regional Emergency Planning Alliances, Health Care Coalitions, and Health Care Organizations to Regularly Exercise, Measure, and Report (in a Standardized Manner) Their Ability to Surge During and After Incidents**

Valid and reliable performance measures are critical for evaluation and quality improvement. The data derived from a set of standardized measures and a reporting process will help maintain accountability for public investments in improving surge capabilities. They provide a way to monitor and describe performance as well as make comparisons across units and over time.

In addition, performance measures are integral to conducting research to identify effective strategies for building surge capacity and capabilities. Promising practices can then be disseminated and used by other regions, health care coalitions, or health care organizations. Similarly, valid and reliable surge-related performance measures are an important component of quality improvement activities.

The following activities will be undertaken in support of this outcome:

- **4.4.1 ASPR, CMS, and HRSA, in coordination with DHS and DOT/NHTSA, will work with partners to define terms and develop measures to assess a *health care organization's* capability to deliver medical care in response to an incident with potentially negative health consequences. (Potential Partners: AHRQ, DHS, DOI, DOT/NHTSA; local, state, territorial, and tribal governments.)**
- **4.4.2 ASPR, CDC, and CMS, in coordination with DHS and DOT/NHTSA, will work with partners to define terms to measure and assess a *health care coalition's* capability to deliver medical care in response to an incident with potentially negative health consequences. (Potential Partners: AHRQ, DHS, DOI, DOT/NHTSA; local, state, territorial, and tribal governments.)**
- **4.4.3 ASPR, CDC, CMS, and HRSA, in coordination with DHS and DOT/NHTSA, will work with partners to define terms to measure and assess a *region's* capability to deliver medical care in response to an incident with potentially negative health consequences. (Potential Partners: AHRQ, DHS, DOD, DOI, DOT/NHTSA; local, state, territorial, and tribal governments.)**
- **4.4.4 ASPR, CDC, CMS, DHS, DOT/NHTSA, and HRSA will work with partners to define terms to measure and assess a *state's* capability to deliver medical care in response to an incident with potentially negative health consequences. (Potential Partners: AHRQ, DOI; local, state, territorial, and tribal governments.)**

#### **4.5 Barriers to Health Care Integration Are Identified and Solutions Are Promoted to Enable Health Care Organizations, Health Care Coalitions, and Regional Emergency Planning Alliances to Function Effectively in the Wake of an Incident**

Organizations, coalitions, and alliances may face barriers in building and maintaining an integrated, scalable health care delivery system. The urgency of a response generally does not allow a comprehensive analysis of the barriers or the options for addressing them in real time. Therefore, it is important to take actions to identify and overcome possible barriers proactively. Barriers may be related to legal authorities, regulatory requirements, policies, or processes (e.g., operations, resources).

The following activities will be undertaken in support of this outcome:

- **4.5.1 ASPR, CDC, CMS, SAMHSA, FDA, IGA, OASH, and OCR will work with partners to identify current efforts to address the barriers that may arise during large-scale incidents; support a coordinated approach to addressing these issues; and develop clear and consistent guidelines for future incidents, as appropriate. (Potential Partners: DHS, DOD, DOI, DOT/NHTSA, ONC, OPM, VA; state government, legal experts, academia.)**
  - Potential areas of review may include ethical decisionmaking, billing and reimbursement, health information sharing/privacy, organizational and individual liability protections, credentialing/ licensure issues (including expanding practitioner scope of practice), anti-trust and competitiveness issues, and options for addressing the needs of at-risk individuals.
- **4.5.2 ASPR, CDC, CMS, FDA, OCR, and OGC will clarify the legal authorities to facilitate the integration of health care organizations, health care coalitions, and regional emergency planning alliances that are allowable under existing federal laws and regulations (e.g., authorities to grant waivers, to authorize the emergency use of medical countermeasures [MCMs]) and will provide awareness to stakeholders regarding these authorities (e.g., the process for requesting or initiating waivers).**

## OBJECTIVE 5: ENSURE TIMELY AND EFFECTIVE COMMUNICATIONS

Lessons learned from national emergencies such as the 9/11 terrorist attacks, Hurricane Katrina, and the 2009 H1N1 influenza pandemic highlight the important role that communication plays during a response. Effective communication is critical to nearly every aspect of national health security, as it supports and enables the full range of capabilities needed to respond efficiently and effectively to an incident. This chapter addresses two components of effective communication: (1) communication with the public and (2) operational communication, which focuses on communication among responders (public health, health care, human services, EMS, law enforcement, emergency management, and others).

Effective communication with the public entails providing high-quality information (i.e., information that is accurate, timely, credible, understandable, actionable) to elicit the appropriate community response on the part of individuals and their families, including at-risk populations; private-sector, nongovernmental, and academic organizations; and all forms of government (i.e., local, state, territorial, and federal) before, during, and after an incident, including the facilitation of mitigation and recovery. It relies on an understanding of what motivates human behavior. Effective operational communication places an emphasis on increasing efficiency, interoperability, and situational awareness during a response.

The terrorist attacks at the World Trade Center in 2001 highlighted gaps in interoperable communications. Since then, local, state, territorial, tribal, and federal governments have invested heavily in improving their ability to communicate effectively. While these investments represent an important step forward in ensuring timely and effective communications, challenges and gaps remain.

The following list represents the desired four-year outcomes that together will enable timely and effective communications in support of national health security. Four of the outcomes are associated with high-quality, effective communication with the public, and two are associated with effective communication among responders.

In the following sections, these outcomes are described in more detail. The activities listed under each outcome below will be initiated, subject to availability of resources, to help achieve these outcomes. These activities build on the many existing efforts, refining and expanding them to further improve communications. While these activities represent an important step forward, ongoing efforts will be needed to achieve the objective of ensuring timely and effective communications.

## Four-Year Outcomes for Ensuring Timely and Effective Communications

Outcomes that support high-quality communication with the public:

- Information exchange with the public occurs on an ongoing basis.
- Accurate, credible, understandable, and actionable information is provided to the public in a timely way.
- Information provided to the public is coordinated and consistent across response and recovery organizations.
- Culturally and linguistically appropriate information is exchanged with all segments of the target population, including at-risk individuals.

Outcomes associated with effective communication among responders:

- Secure, sustainable, interoperable, and redundant communications systems/equipment are in place to support a response.
- Effective coordination and communication occur within and across response and recovery organizations.

### 5.1 Information Exchange with the Public Occurs on an Ongoing Basis

As described in the NHSS, effective communication goes beyond the dissemination of messages *to* the public to include regular information exchanges *with* the public and the development of trusted networks that facilitate the public's ability to communicate with responders at all levels of government before, during, and after an incident. Significant resources have been devoted to building government capability to develop and disseminate messages to the public. Similarly, a greater emphasis must now be placed on enhancing two-way communication with the public, including the use of new technologies and methods to improve the ability of government at all levels to receive and effectively integrate information from the public.

The activities described below are intended to encourage and facilitate information exchange with the public. While the information exchange occurs primarily at the community level, the federal government will play a critical role in facilitating the exchange by developing resources to assist communicators at the local level.

The following activities will be undertaken in support of this outcome:

- **5.1.1 HHS will research potential successful strategies and practices for receiving information from the public both routinely and during an incident. (Potential Partners: ACF, AOA, Assistant Secretary for Public Affairs [ASPA], CDC, CMS, DHS, DOI, FDA, IHS, National Institutes of Health [NIH], ONC, SAMHSA; local, state, territorial, and tribal governments.)**
- **5.1.2 HHS, DHS, DOD, and VA will work with partners to expand and promote existing communication networks that include health officials, behavioral health experts, community leaders, community-based organizations, other stakeholder groups, and the general public. (Potential Partners: ASPA, ACF, AOA, ASPR, CDC, CMS, DOI, FDA, IHS, NIH, OCR, SAMHSA; local, state, territorial, and**

**tribal governments; health officials; behavioral health experts; community leaders, community-based organizations; 9-1-1 authorities; first responders; the public.)**

- Develop trusting relationships among all parties before an incident occurs. This is facilitated by working together on day-to-day public health issues and activities and by ensuring that communications are tailored to the community (e.g., culturally appropriate).
- Engage network members in communications planning, message dissemination, and message evaluation (such as feedback analysis and other research to determine whether messaging is effective).
- Identify gaps in communication networks and engage with partners to fill them.
- **5.1.3 HHS will work with response partners to develop and disseminate effective methods to monitor for and address rumors and misperceptions during an incident. (Potential Partners: ASPA, CDC, DHS, DOI, FDA; local, state, territorial, and tribal governments; professional associations; academia and research centers.)**

## **5.2 Accurate, Credible, Understandable, and Actionable Information Is Provided to the Public in a Timely Way**

During an incident, all levels of government are expected to rapidly and regularly provide information to the public, with the objective of mounting a coordinated response and preventing illness, injury, adverse behavioral health effects, social disruptions, or death. The quality and timeliness of messages are critical to effective crisis and risk communication during an incident. A high-quality message is accurate, credible, and accessible to diverse audiences, and it provides actionable information that clearly communicates the response needed from the people and communities who receive the message. Timeliness is critical, particularly in the initial phase of an incident, when information is limited and often rapidly changing. To the extent possible, it is important to develop messaging before an incident that can be shared across governments. The preparation of pre-scripted messages before an incident will facilitate the timely development and dissemination of high-quality messages during an incident.

The following activities will be undertaken in support of this outcome:

- **5.2.1 ASPR and CDC will work with partners to expand message content and make national health security messages (covering such topics as preparedness, response, and recovery) available in multiple formats and languages to stakeholders. (Potential Partners: ASPA, DHS, DOI, FDA; local, state, territorial, and tribal governments; professional associations; academia and research centers.)**
  - Identify, collect, and disseminate best practices and exemplary materials to all relevant stakeholders for crisis and risk communication, including materials and dissemination mechanisms designed for at-risk individuals.
  - Maintain and update as needed an inventory of accessible, understandable, and rigorously tested message prototypes for a range of plausible scenarios that can be quickly adapted once the incident (e.g., the severity of a pandemic) is characterized.

- **5.2.2 CDC will work with partners to build the capability to rapidly test and/or evaluate national health security messages so that they can be adapted as needed during an incident. (Potential Partners: ASPA, ASPR, DHS, DOI, FDA; local, state, territorial, and tribal governments; academia and research centers.)**
  - Facilitate and encourage research to develop methods for rapidly testing the effectiveness of public health and medical crisis and risk communication messages, including research to understand how messages might need to be adapted due to variations in the way risk is perceived among different populations. Potential strategies for consideration include:
    - Establish cross-agency processes to informally test messages.
    - Establish agreements with professional associations to evaluate the comprehensibility of communications targeted at their stakeholders.
    - Establish collaborative relationships with community partners to provide rapid feedback on message effectiveness.
  - Identify and pursue strategies to address any barriers to obtaining rapid feedback.
  - Develop and disseminate guidance for local, state, territorial, and tribal governments based on research carried out under above-mentioned activity concerning the effectiveness of crisis and risk communication messages.
- **5.2.3 CDC will facilitate and incorporate evaluation research to evaluate the effectiveness of existing crisis and risk communication training programs; programs will be maintained, expanded, revised, or discontinued as warranted by study results. (Potential Partners: ASPA, ASPR, DHS, FDA; local, state, territorial, and tribal governments; academia and research centers.)**
- **5.2.4 SAMHSA will work with partners to engage behavioral health subject-matter experts in communication planning and message dissemination. (Potential Partners: ASPA, ASPR, CDC, FDA; local, state, territorial, and tribal governments; academia and research centers.)**
- **5.2.5 HHS will work with partners to implement and/or maintain a training program to train government leaders and partners in risk communications. (Potential Partners: ASPA, ASPR, CDC.)**

### **5.3 Information Provided to the Public Is Coordinated and Consistent Across Response and Recovery Organizations**

It is critical that national health security organizations at all levels coordinate their efforts throughout the entire process of message development and dissemination. Such coordination saves time and resources because there is less duplication of efforts in message development (e.g., multiple entities developing similar messages). It also minimizes the possibility of conflicting messages, which can create confusion among the public and reducing public trust in key information sources.

The following activities will be undertaken in support of this outcome:

- **5.3.1 HHS and DHS will work with partners to continue to enhance public health and medical emergency support communication plans that coordinate public communication message development and dissemination strategy across all levels of government and with community partners. (Potential Partners: ACF, ASPR, CDC, CMS, DOI, FDA, IHS, SAMHSA; local, state, territorial, and tribal governments; nongovernmental organizations.)**
  - Actively engage state, local, territorial, and community partners in communications using the National Response Framework Emergency Support Function No. 15 management process.
  - Establish standard operating procedures for coordinating message development (i.e., who is developing what message) across the local, state, territorial, tribal, federal, and international levels during an incident to ensure that the process is as transparent as permissible and to minimize duplication of effort.
  - Use existing platforms, as well as new ones that become available, to aggregate information that is shared with the public.
- **5.3.2 ASPR, CDC, and DHS will work with partners to test crisis and emergency risk communication plans through operations-based exercises as well as real incidents, and will include relevant community partners in exercises. (Potential Partners: FDA; local, state, territorial, and tribal governments; nongovernmental organizations.)**
  - For each operations-based exercise and real incident, develop an after-action report and an improvement plan to address any problems/issues that were identified.
  - Monitor implementation of actions in the improvement plan.

#### **5.4 Culturally and Linguistically Appropriate Information Is Exchanged with All Segments of the Target Population, Including At-Risk Individuals**

As described in the NHSS, effective risk communication involves being able to reach all segments of the affected population, especially persons with limited English proficiency and individuals with disabilities, in ways they understand and through sources they trust. Reaching all people means that the message must be technically accessible, must come through the appropriate and trusted channels for the population, and must be understandable and culturally and linguistically appropriate. Messaging should be consistent with applicable specifications for individuals with disabilities in Section 508 of the Rehabilitation Act. In most cases, reaching all members of the target population will require the message to be delivered in a variety of formats through a number of different channels. To do this effectively, local agencies must have a thorough understanding of who is in their community, what the health literacy of the community is, and what their communication needs are.

The following activities will be undertaken in support of this outcome:

- **5.4.1 ASPA, ASPR, and CDC will work with partners to collect best practices for identifying information needs, effective media channels, and trusted spokespersons for the range of population groups within a community. (Potential Partners: DHS,**

**DOD, DOI, FDA; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; academia and research centers.)**

- **5.4.2 HHS (ASPA, ASPR, CDC, and SAMHSA) will explore options for more effective use of media channels (including social media) in disseminating public health messages. (Potential Partners: DHS, DOI, the Federal Communications Commission [FCC], FDA, ONC; local, state, territorial, and tribal governments; nongovernmental organizations, academia and research centers; private sector.)**
  - Determine whether there is a need for new policies and procedures to guide the use of different media channels, including social media.
  - Develop, evaluate, and disseminate training/guidance on strategies for the effective use of media channels to disseminate public health messages.
  - Evaluate the effectiveness of RSS and geoRSS feeds<sup>36</sup> and other new technology in providing a coordinated and consistent message; if found to be effective, develop a strategy for expanding use of such tools.
  - Monitor social media channels to determine appropriate communication strategies.
- **5.4.3 CDC will work with partners to translate relevant scientific research so that it is easily understandable for a range of populations and will disseminate this guidance to local, state, territorial, and tribal personnel. (Potential Partners: AHRQ, AOA, ASPA, DHS, DOI, FDA, NIH, OCR, OSTP; private sector; academia and research centers.) Potential strategies include:**
  - Pre-develop messages using crisis and risk communication principles and based on scientific rationale.
  - Disseminate guidance to governments and partners with pre-developed messages.
  - Identify, collect, and disseminate best practices for relevant issues (e.g., health literacy) and proof of concept using relevant scientific theory and models.
- **5.4.4 ASPR, CDC, and DHS will work with partners to actively engage elected and nonelected community leaders in identifying and addressing any communication issues/concerns. (Potential Partners: DHS, DOI, FDA, OCR; local, state, territorial, and tribal governments; nongovernmental organizations; private sector.)**
  - Solicit input on and strategies for addressing specific communication needs for different populations within a community.
  - Establish a network of community representatives, including trusted leaders and local elected officials, to provide input on cultural sensitivity, comprehensibility, and appropriate delivery mechanisms and to serve as trusted and appropriately trained communicators during an incident.

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<sup>36</sup> RSS, or Really Simple Syndication, is a web feed technology used to publish works such as blog entries, news headlines, audio, and video that are frequently updated. GeoRSS is an emerging standard for encoding location as part of a web feed. For more information, see ArcGIS Resource Center, "GeoRSS Feeds in Explorer," ArcGIS Blog, September 4, 2008, accessed May 12, 2011 at <http://blogs.esri.com/Info/blogs/arcgisexplorerblog/archive/2008/09/04/georss-feeds-in-explorer.aspx>.

## **5.5 Secure, Sustainable, Interoperable, and Redundant Systems/Equipment Are in Place to Support a Response**

Coordinated communications are needed within and across response organizations and command elements to support timely situational awareness and the efficient response to an incident. To support such communications, communications technologies—equipment and systems—need to be secure and sustainable. Moreover, they must be redundant to minimize the risk of critical breakdown.

Interoperability is one of the key challenges to effective communications across organizations. Building interoperable systems is difficult because it requires coordination among a diverse set of national health security organizations with different missions and priorities. Moreover, the emergency communication funding streams for those organizations are often separated by discipline. Without a common understanding of emergency communication priorities across all federal agencies, the existence of multiple funding sources increases the likelihood of duplicative, inconsistent, or even contradictory efforts.

The following activities will be undertaken in support of this outcome:

- **5.5.1 ASPR and DHS will coordinate emergency communications grant priorities and guidance across all U.S. government departments and agencies.**
- **5.5.2 ASPR and DHS will facilitate and encourage research to identify innovative and effective strategies to encourage nongovernmental emergency responders (e.g., hospitals) to invest in interoperable communications technology. (Potential Partners: ASPA, CDC, OSTP; academia and research centers.)**
- **5.5.3 ASPR and DHS will work with partners to develop appropriate “communication caches,” i.e., collections of adaptable messages and other information that can be used by rapid assessment teams in developing communications after no-notice incidents such as earthquakes and chemical or biological attacks. (Potential Partners: ASPA, CDC, FDA.)**

## **5.6 Effective Coordination and Communication Occur Within and Across Response and Recovery Organizations**

As described above, communication technologies play a key role in supporting coordinated communications within and across response organizations. Technology, however, is not sufficient in itself to allow communication to occur. There is also a social component to responder communications that is equally important. That is, for effective communication to occur, there must be strong preexisting relationships between all response and recovery organizations. These relationships facilitate trust and promote information-sharing. Building relationships across the diverse organizations involved in a response, however, can be challenging. It requires the engagement of all relevant actors, who need to come together to clearly define roles and responsibilities, gain a better understanding of each organization’s mission and perspective, and develop a set of common goals.

The following activities will be undertaken in support of this outcome:

- **5.6.1 ASPR and DHS will ensure that public health and medical care emergency communication roles, responsibilities, and activities are coordinated and consistent across relevant response frameworks (e.g., National Response Framework). (Potential Partners: CDC, FDA.)**
- **5.6.2 DHS, in coordination with HHS, will work with partners to integrate health care and public health organizations more fully into activities and programs run through the Office of Emergency Communications in DHS. (Potential Partners: ASPR, CDC; local, state, territorial, and tribal governments; professional associations, health care providers.)**
  - Expand the governance (i.e., Executive Committee and/or Emergency Response Council) of SAFECOM, a program housed within the Office of Emergency Communications, to include representatives of health care, public health, and local emergency responder organizations.
- **5.6.3 ASPR, CDC, and DHS will work with partners to implement and refine statewide communication interoperability plans (SCIPs). (Potential Partners: Local, state, territorial, and tribal governments; medical first responders; health care providers.)**
  - Ensure that all relevant health care and public health organizations are integrated into the governance, implementation, and refinement of the SCIP.
  - Conduct communications-specific exercises to test capabilities and identify gaps and challenges. Develop and implement improvement plans based on the results of the exercise.
- **5.6.4 ASPR, DHS, DOT/NHTSA, and FCC will work with partners to foster and support relationships among all stakeholders representing the continuum of emergency communication, including the FCC (telecommunications providers and media), DOT (National 911 Program), and the Office of Emergency Communications (radio communication among first responders). (Potential Partners: CDC, FDA; telecommunications providers, media; local, state, territorial, and tribal 9-1-1 authorities; emergency operations centers, first responders [law enforcement, fire services, EMS], hospitals, public health agencies.)**

## OBJECTIVE 6: PROMOTE AN EFFECTIVE COUNTERMEASURES ENTERPRISE

Countermeasures include both pharmaceutical and nonpharmaceutical actions and items. Medical countermeasures (MCM) include pharmaceuticals, diagnostic items (such as laboratory testing equipment and supplies), and products that aim to prevent or mitigate the adverse health effects resulting from exposure to pandemics, explosives, intentional use of biological agents, chemicals, or a radiological/nuclear event.<sup>37</sup> Pharmaceutical MCMs may be initiated either before or after exposure for the purposes of active immunoprophylaxis (e.g., vaccines), passive immunoprophylaxis (i.e., immunoglobulins and antitoxins), and chemoprophylaxis (i.e., post-exposure antibiotic or antiviral prophylaxis) or therapy. Diagnostic MCMs are used to identify persons with or without signs and symptoms after possible exposure to a particular agent. Nonpharmaceutical MCMs include personal protective equipment (such as respiratory protective devices, protective suits and gloves, and ventilators) and procedures (such as isolation of infected individuals and decontamination of exposed individuals).<sup>38</sup>

The Nation has committed significant resources to developing and stockpiling MCMs. The central framework for MCM planning and implementation in the federal government is the HHS Public Health Emergency Medical Countermeasures Enterprise (PHEMCE), a coordinated interagency effort responsible for defining and prioritizing requirements, supporting research and development, and establishing deployment and use strategies for MCMs through the CDC Strategic National Stockpile (SNS).<sup>39</sup> The SNS is a national repository with medicine, medical products, and medical supplies, which are designed to supplement state and local supplies during a large-scale health incident. The Biomedical Advanced Research and Development Authority (BARDA), within the Office of ASPR, provides an integrated, systematic approach to the advanced development and acquisition of MCMs,<sup>40</sup> while the FDA's Medical Countermeasures Initiative (MCMi)<sup>41</sup> aims to support enhanced review of novel manufacturing approaches and advance regulatory science to improve countermeasure evaluation and licensing pathways. Other government organizations, including DOD, are also involved in the advanced development and acquisition of MCMs.

MCMs may be needed to address a wide spectrum of natural and deliberate threats to national health security, including emerging and re-emerging diseases, drug-resistant pathogens, deliberately bio-engineered germs, pandemics, and acts of bioterrorism. A robust national health security framework is required to govern the development, maintenance, and use of MCMs. From detection to decision to distribution to dispensing, the efficient and timely administration

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<sup>37</sup> Department of Homeland Security, "Homeland Security Presidential Directive 18: Medical Countermeasures Against Weapons of Mass Destruction," January 31, 2007.

<sup>38</sup> Robin Robinson, testimony before the Committee on Appropriations Subcommittee on Defense, U.S. House of Representatives, April 24, 2008, (accessed online May 13, 2011, at <http://www.hhs.gov/asl/testify/2008/04/t20080424a.html>).

<sup>39</sup> See Centers for Disease Control and Prevention, "Strategic National Stockpile," no date, accessed online May 13, 2011, at <http://www.cdc.gov/phpr/stockpile/stockpile.htm>.

<sup>40</sup> See U.S. Department of Health and Human Services, Public Health Emergency Medical Countermeasures Enterprise, "Biomedical Advanced Research and Development Authority," no date, accessed online May 13, 2011, at <https://www.medicalcountermeasures.gov/BARDA.aspx>.

<sup>41</sup> See U.S. Food and Drug Administration, "Emergency Preparedness and Response," no date, accessed online May 13, 2011, at <http://www.fda.gov/EmergencyPreparedness/MedicalCountermeasures/default.htm>.

of MCMs spans the national health security spectrum and affirms the Nation's resilience community by community.

This chapter focuses on two components of an effective MCM enterprise: support for the discovery and production of MCMs and support for an efficient multispectrum MCM distribution and dispensing strategy. The first component was the focus of *The Public Health Emergency Medical Countermeasures Enterprise Review*.<sup>42</sup> In that report, HHS highlighted the need for a strategy that incorporates the ability both to counter identified threats and to quickly produce MCMs for unknown threats. The second component addressed in this chapter focuses on the need for innovative solutions to increase capabilities to distribute and dispense MCMs. The Office of the ASPR has expanded efforts to explore alternative dispensing strategies by seeking professional and public inputs.<sup>43</sup> These will help inform federal policy, programs, and plans.

The following list represents the desired four-year outcomes that, together, will promote an effective countermeasures enterprise. These outcomes are related to the two components mentioned above. In the following sections, these outcomes are described in more detail. The activities to help achieve each outcome described below will be initiated, subject to availability of resources. These activities should be undertaken to expand already ongoing efforts.

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<sup>42</sup> U.S. Department of Health and Human Services, *The Public Health Emergency Medical Countermeasures Enterprise Review: Transforming the Enterprise to Meet Long-Range National Needs*, Washington, D.C., August 2010.

<sup>43</sup> The HHS Office of the ASPR has entered into external contractual agreements to gather professional and public opinion regarding pre-positioning medical countermeasures for civilian nonresponder populations.

## **Four-Year Outcomes for Promoting an Effective Medical Countermeasures Enterprise**

Outcomes to support the discovery and production of medical countermeasures:

- Expanded and enhanced strategic collaboration with manufacturers of medical countermeasures
- Enhanced manufacturing surge capacity and use of flexible manufacturing, platform technologies, and an expanded product pipeline to more rapidly produce novel vaccines and medical countermeasures
- Support for innovation for more durable and easy-to-administer medical countermeasures

Outcomes to support an efficient, multispectrum medical countermeasures distribution and dispensing strategy to avert mass casualties and/or fatalities:

- Adequately stocked and positioned repositories of medical countermeasures and ancillary supplies
- A well-informed policy that addresses the full spectrum of dispensing strategies, including strategies that enhance fair access to medical countermeasures
- Expanded capabilities of relevant multidisciplinary workforces (public health, emergency response, National Guard, Medical Reserve Corps, and a diverse group of other health professionals) to support rapid, effective, and appropriate medical countermeasures dispensing in response to a large-scale incident
- Improved education, communication, information-sharing, and transparency to help all citizens understand and participate in community-governed medical countermeasures dispensing and administration strategies

### **6.1 Expanded and Enhanced Strategic Collaboration with Manufacturers of Medical Countermeasures**

A sustainable MCM enterprise requires the flexible capacity to increase the number and types of MCMs that will be made available pending or following a large-scale incident with potentially negative health consequences. To support such a capacity, it is necessary to develop conditions that enhance manufacturing surge capacity and the use of flexible manufacturing platform technologies, and an expanded product pipeline to more rapidly produce novel vaccines and other needed MCMs. The activities described below are intended to expand and enhance strategic collaboration with MCM manufacturers.

The following activities will be undertaken in support of this outcome:

- **6.1.1 HHS (ASPR, CDC, FDA, NIH) will work with partners to catalyze the development of new MCMs across the spectrum of development from pre-clinical, testing, evaluation, and advanced development to manufacturing services. (Potential Partners: DOD and other government organizations; private sector; academia and research centers.)**

- Emphasis will be placed on priorities set by the PHEMCE. Specific focus will be given to technologies or approaches that can demonstrate increased efficacy, safety, and product quality; reduce costs; or accelerate administration times. MCM dispensing systems that utilize existing supply chains may also offer efficiencies of MCM distribution.
- Examples of increased efficacy include products against chemical and biological agents; radiological and nuclear treatments and multiple-spectrum antimicrobials and therapeutics that could be used for a range of infectious diseases.
- Examples of reduced cost include efforts to harmonize multiyear budget plans across the relevant agencies addressing MCM development.
- Examples of reduced administration time include rapid diagnostic screening methods or access to MCMs and PPE for responders.
- **6.1.2 Relevant departments and agencies will coordinate the determination of MCM requirements based on risk assessment. (Potential Partners: Other federal agencies.)**

## **6.2 Enhanced Manufacturing Surge Capacity and Use of Flexible Manufacturing, Platform Technologies, and an Expanded Product Pipeline to More Rapidly Produce Novel Vaccines and Medical Countermeasures**

*The Public Health Emergency Medical Countermeasures Enterprise Review* emphasizes the need for a strategy that incorporates the ability both to counter identified threats and to quickly produce MCMs for unknown threats. This strategy is articulated through the following vision:

Our Nation must have the nimble, flexible capacity to produce medical countermeasures rapidly in the face of any attack or threat, known or unknown, including a novel, previously unrecognized, naturally occurring emerging infectious disease.<sup>44</sup>

The *Medical Countermeasure Enterprise Review* recommends new infrastructure initiatives that address more robust regulatory science, enhancements to the manufacturing process, and the establishment of an independent strategic investment firm to support innovation in MCMs. The activities described below are intended to enhance manufacturing surge capacity and the use of flexible manufacturing, platform technologies, and an expanded product pipeline.

The following activities will be undertaken in support of this outcome:

- **6.2.1 DOD and HHS, through initiatives such as the FDA Medical Countermeasures Initiative (MCMi), will work with manufacturers of MCMs to expand production capability and surge capacity through nimble, multiuse technology platforms/facilities. (Potential Partners: Manufacturers of MCMs.)**
- **6.2.2 FDA will work with partners to develop clear regulatory pathways along which manufacturers may develop their products from bench-top to approval.**

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<sup>44</sup> U.S. Department of Health and Human Services, *The Public Health Emergency Medical Countermeasures Enterprise Review*, 2010, p. 6.

**(Potential Partners: Other HHS agencies, DOD and other federal agencies; academia and research centers, private sector.)**

- Define viable regulatory pathways, speeding progress toward product approval by helping to anticipate and resolve bottlenecks and to identify and address scientific problems that may emerge.
- Advance regulatory science to improve medical countermeasure development and evaluation by strengthening FDA scientific capacity.
- Conduct an examination of the legal framework, as well as regulatory and policy approaches, toward MCM development and availability, to assess adequacy or improvements needed to properly support preparedness and response.

### **6.3 Support for Innovation for More Durable and Easy-to-Administer Medical Countermeasures**

Strategies are also needed to optimize access to MCMs during or following an incident. Development of MCMs that can be administered by nonmedical personnel, have a long shelf life, and/or reduce the need for refrigeration are enhanced steps toward more efficient and sustainable MCM dispensing practices. The activity described below is intended to support innovation in developing more durable and easy-to-administer MCM delivery systems.

The following activity will be undertaken in support of this outcome:

- **6.3.1 DOD and HHS will work with partners to promote the development of MCMs that are simple to administer or use and/or have an extended shelf life. (Potential Partners: Manufacturers of MCMs; health care organizations; public health agencies.)**

### **6.4 Adequately Stocked and Positioned Repositories of Medical Countermeasures and Ancillary Supplies**

A wide-ranging national approach for dispensing MCMs will harness and integrate the capabilities and commitment of all sectors and agencies, governmental and nongovernmental, to reduce morbidity and mortality in the communities they serve. Timely and effective access to MCMs requires more than familiarity with the type and location of incident-appropriate pharmaceuticals. It also requires knowledge of the geographic distribution of both indigenous and transitory (e.g., daily workforce) populations and their transportation and mobility systems; an easily assembled workforce that is trained and prepared to dispense MCMs; multimedia channels of culturally and linguistically sensitive risk communication and notification systems to direct exposed persons efficiently to medical care and therapeutics; and a repertoire of strategies to optimize access to life-saving drugs for both ambulatory and nonambulatory persons as well as other at-risk individuals. Public health efforts should utilize existing public emergency services when available. The activities described below are intended to help develop adequately stocked and positioned repositories of MCMs and ancillary supplies.

The following activities will be undertaken in support of this outcome:

- **6.4.1 HHS will encourage continued collaboration regarding federal, state, local, regional, and private MCM stockpiles and put in place systems that facilitate sharing and augment equitable and efficient MCM use. (Potential Partners: State and local governments, regional entities, and private sector.)**
  - Establish strategy and partnerships regarding governmental and private-sector caches to share and augment local MCM dispensing capacity and capabilities.
- **6.4.2 CDC will work with partners to align strategies and ensure adequately stocked and positioned repositories of MCMs and/or laboratory testing equipment and supplies, and devices. (Potential Partners: FDA and other federal agencies; local, state, territorial, tribal governments; private sector.)**
  - The SNS should continue to work through the PHEMCE to ensure that concepts of operations (CONOPS) are considered and validated prior to product acquisition.
  - The SNS should continue to pursue efficiencies through consideration of comprehensive lifecycle costs and the merits of all potential storage modalities prior to acquisition. This should include the potential for commercial product rotation, the potential of cost deferral with the Shelf Life Extension Program (SLEP<sup>45</sup>), and any operational limitations that might preclude particular storage options prior to MCM acquisition.
- **6.4.3 CDC will continue to work with each state and its respective local health departments to develop plans to receive and distribute SNS medical products and medical supplies to local communities as quickly as possible, and to explore diverse distribution and dispensing strategies to best meet the needs of their populations. (Potential Partners: Local, state, territorial, and tribal health departments and other agencies.)**

## **6.5 A Well-Informed Policy That Addresses the Full Spectrum of Dispensing Strategies, Including Strategies That Enhance Fair Access to Medical Countermeasures**

The federal government has recognized that the diversity of threats and population vulnerabilities necessitates an MCM use platform that incorporates multiple dispensing strategies, such as the U.S. Postal Service Model, community pharmacies, and home and/or workplace pre-positioning, among other options.<sup>46</sup> Communities that adopt particular dispensing strategies should consider

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<sup>45</sup>The Shelf-Life Extension Program (SLEP) is a fee-for-service program for certain large federal stockpiles of military, significant or contingency use products. SLEP is administered by the DOD; FDA conducts the testing and evaluation of products/lots that are identified to FDA for testing. The SNS is a participant in SLEP. DoD and SNS both maintain large stockpiles of medications and vaccines to ensure that both military and civilian populations have access to needed antidotes and treatments in the event of a medical emergency. To save federal dollars, FDA and DOD developed this system to extend the shelf life of these drugs (excluding vaccines) beyond the manufacturer's expiration date. All testings for extensions are done at FDA test facilities. See U.S. Army Medical Materiel Agency, "Extending the Shelf Life of Critical 'War Reserves' Medical Materiel Using the FDA/DOD Shelf Life Extension Program," March 31, 2005, accessed online May 13, 2011 at [https://slep.dmsbfd.a.army.mil/slep/slep\\_info\\_paper\\_mar2005.doc](https://slep.dmsbfd.a.army.mil/slep/slep_info_paper_mar2005.doc).

<sup>46</sup> These dispensing strategies may require an Emergency Use Authorization (EUA) prior to the dispensing and administration of certain medical countermeasures. An EUA is a legal means that enables the FDA under Section 564 of the Federal Food, Drug,

and assess the degree to which those selected are sufficiently redundant, equitable, and efficient. Dispensing strategies must also incorporate policies to ensure that products are appropriately refreshed, collected and destroyed, or retained subject to requirements under the DOD/FDA SLEP in certain circumstances. The SNS has goals targeting the federal capability for receiving and distributing large quantities of MCMs. However, diverse strategies should be identified and improved on to achieve the national goals underpinning the NHSS. Potential gaps in public health systems' capacity, durability, and response time for dispensing MCMs require the use of well-informed strategies to ensure that they are optimally accessible through the use of such strategies.

The following activity will be undertaken in support of this outcome:

- **6.5.1 HHS will analyze the efficacy and feasibility of pre-positioning personal or home stockpiles of oral antibiotics for certain groups of responders and subgroups of the public.**<sup>47</sup>

## **6.6 Expanded Capabilities of Relevant Multidisciplinary Workforces to Support Rapid, Effective, and Appropriate Medical Countermeasures Dispensing in Response to a Large-Scale Incident**

Increasing the number and availability of different MCMs needed to address various threats will place significant demands on the workforce designated to help dispense and administer these products. This workforce will require knowledge and continual refreshing of information regarding the use and administration of MCMs among a diverse and expanding national population. Additionally, this workforce should have access to exercises to practice what they will communicate and how they will perform during a public health emergency. Workers should also have the tools and knowledge to protect themselves during an incident (e.g., by receiving an early flu vaccine) before they put themselves in harm's way to protect their families and their communities.

The following activities will be undertaken in support of this outcome:

- **6.6.1 DHS and HHS will work with partners to identify and enumerate the multiple classes of personnel designated within the broad classification of “responder” whose actions may be critical to preserving infrastructure and continuity as well as protecting the health and safety of others during or after an incident. (Potential Partners: Other federal agencies; local, state, territorial, and tribal governments; private sector; other response organizations.)**

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and Cosmetic Act to authorize the use of certain unapproved products or certain unapproved uses of previously approved products during a declared emergency that involves a biological, chemical, radiological, or nuclear agent. On April 27, 2009, for example, the FDA issued an EUA to make available under certain circumstances diagnostic tools (rRT-PCR Swine Flu Panel) for the 2009 H1N1 influenza outbreak response.

<sup>47</sup> Executive Order 13527 was signed by President Obama on December 30, 2009, to identify approaches for “Establishing Federal Capability for the Timely Provision of Medical Countermeasures Following a Biological Attack.” This executive order addresses federal Mission Essential Personnel (MEPs), other state and local emergency response capability, and enhancements to the U.S. Postal Model for dispensing medical countermeasures.

- **6.6.2 HHS will work with partners to inform the capabilities of a workforce that is trained and routinely exercised in the knowledge and skills required to rapidly dispense appropriate MCMs to diverse communities. (Potential Partners: Other federal agencies; local, state, territorial, and tribal governments; private sector; other response organizations.)**
- **6.6.3 HHS will develop policies and strategies to ensure that this workforce is provided the appropriate MCMs to protect their health and safety. These strategies may include, as appropriate, pre-incident vaccination, access to worksite or community pharmacy MCM caches, or personal antibiotic stockpiles.**
- **6.6.4 CDC will work with partners to ensure that local, state, territorial, and tribal public health officials and designated hospital authorities have sufficient knowledge of the contents and dispensing policies associated with the materiel from the SNS. (Potential Partners: FDA; local, state, territorial, and tribal public health departments.)**

## **6.7 Improved Education, Communication, Information-Sharing, and Transparency to Help All Citizens Understand and Participate in Community-Governed Medical Countermeasures Dispensing and Administration Strategies**

A national MCM strategy is one in which all parties—from those who manufacture vaccines, antibiotics, and other medical products to those who will be the recipients of these potentially life-saving products—have a coordinated understanding of their use.<sup>48</sup> The properties, risks, and benefits of MCMs must be understood so that they will be accepted by the medical and public health communities and by the public for whom they are intended. The products developed to support national health security must be safe, efficacious, and, ideally, easy to administer during or after an incident. Ineffective products could erode public confidence and possibly negate the intent of the program. There are some emergency incidents in which products could be potentially used under Emergency Use Authorization (EUA) or Investigational New Drug (IND) status in which the efficacy and safety of the product, or of the product’s intended use for an emergency, may not be as well defined or as fully established; however, given the circumstances, the benefits of using the product to save lives may outweigh the risks. If MCMs are dispensed in advance to certain groups, the reasons for providing these MCMs, including their medical justification, must be clear to avoid diminished trust in government. The public must also know in advance that the decision to dispense MCMs is guided by information concerning the public’s predicted exposure to an agent or pathogen and the safety of a particular medical countermeasure.

Education and knowledge-building must take place well before a large-scale incident with potentially negative health consequences. Lines of communication must be built, bridges between the public health and medical communities must be buttressed, and outreach to communities through social networking and other channels must be established.

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<sup>48</sup> Organizations such as CDC’s Advisory Committee on Immunization Practices (ACIP) or HHS’s National Vaccine Advisory Committee (NVAC) advise and make recommendations regarding the safe and effective use of MCMs.

The following activities will be undertaken in support of this outcome:

- **6.7.1 HHS (ASPR, CDC, and other HHS agencies as appropriate) will, to improve MCM dispensing, work with public health departments to enhance federal familiarity with local populations, such as understanding of the populations' socioeconomic status, culture, housing, language needs, daily patterns of activity, movement and transportation patterns, and access patterns to emergency care. (Potential Partners: Local, state, territorial, and tribal public health departments.)**
- **6.7.2 HHS (ASPR, CDC, and other HHS agencies as appropriate) will support education, information-sharing, and transparency across government, the private sector, and the public to promote understanding, acceptance, and participation in MCM dispensing and administration strategies. (Potential Partners: DOD; local, state, territorial, and tribal public health departments; private sector; the public.)**
- **6.7.3 HHS (ASPR, CDC, and other HHS agencies as appropriate) will encourage public health officials to continue to work within their communities to discuss and inform mass MCM dispensing strategies and to provide justification for selected approaches, given such factors as population demographics and vulnerabilities, exposure to agents, availability of MCMs, and other information which will educate the public and increase transparency of government. (Potential Partners: Local, state, territorial, and tribal public health agencies; the public.)**
- **6.7.4 HHS (ASPR, CDC, and other HHS agencies as appropriate) will encourage local, state, territorial, and tribal public health officials to engage in regular communication with government, business, and other community sectors to develop and test plans for MCM dispensing. (Potential Partners: Local, state, territorial, and tribal public health agencies; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; the public.)**
  - Existing funding for exercises or other trainings should be re-shaped to incorporate MCM dispensing
- **6.7.5 HHS (ASPR, CDC, and other HHS agencies as appropriate) will encourage local, state, territorial, and tribal public health officials to establish regular contact with their media partners, including television, print, and ethnic media, to determine their willingness to support messages to the public regarding MCMs. (Potential Partners: Local, state, territorial, and tribal public health agencies; media.)**
  - Establish the role of designated Public Information Official or other credible spokespersons.

## OBJECTIVE 7: ENSURE PREVENTION OR MITIGATION OF ENVIRONMENTAL AND OTHER EMERGING THREATS TO HEALTH

The other chapters in the NHSS *Plan* identify activities to address any large-scale incident with potentially negative health consequences. This chapter identifies activities to address environmental<sup>49</sup> and other emerging threats<sup>50</sup> to national health security. These threats can emanate from hazards and contaminants found in the environments in which people live and work as well as threats that emerge from human-to-human interactions, the physical and social environments, and the misuse of technology. By identifying specific threats and activities to address them, the *Implementation Plan* recognizes the interrelationships between human health, animal and plant health, environmental hazards, and other emerging threats, such as climate change, antimicrobial resistance, and gaps in food and water safety.

Although public health and medical activities to mitigate the adverse effects of these threats on human health is the responsibility of the health sector, the prevention of, protection from, response to, and recovery from environmental and other emerging threats cannot be accomplished by one sector alone. These threats must be mitigated by a multisector, interdisciplinary approach consistent with a One Health<sup>51</sup> framework, which recognizes the blurred lines between disciplines, encourages the integration of efforts, and accepts the overlap of missions in an effort to facilitate collaboration and enhance outcomes. Furthermore, some acute incidents require immediate response and management by specific sectors, whereas others present longer-term challenges to be managed by multiple sectors in partnership over many years.

Environmental and other emerging threats to health arise from many sources, man-made and natural, and domestic and foreign. Therefore, this chapter focuses on a few critical areas: emerging and reemerging infectious diseases, environmental hazards and contaminants, and the misuse of life sciences information and technology. However, even within this somewhat narrowed scope, not all occurrences of infectious diseases, environmental hazards, and misuse of life sciences information and technology are threats to national health security. The activities presented in this chapter should be risk-based and research-informed to ensure that they are targeted to the most pressing threats to national health security.

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<sup>49</sup> Environmental threats include risks to human health from climate change, occupational hazards, pathogens, and other contaminants, such as dioxins, petroleum spills, endocrine disrupters, heavy metals, mold, ozone, and misuse of pesticides. Numerous vectors exist in the environment, including food and food products, water, air, soil, insects, plants, and animals that, while not necessarily threats, can serve as pathways for exposing humans to pathogens or other contaminants. See Kyung I. Youn and Thomas T. H. Wan, “Effects of Environmental Threats on the Quality of Care in Acute Care Hospitals,” *Journal of Medical Systems*, Vol. 25, No. 5, pp. 319–331.

<sup>50</sup> Lindler et al. define emerging threats as follows: “Emerging threats can be divided into two groups. The first are ones that began with a classic platform or agent, this is the weaponization of disease agents. The second group would be comprised of agents that do not exist in nature and are produced by man.” See Luther E. Lindler, Eileen Choffnes and George W. Korch, “Definition and Overview of Emerging Threats,” in Luther E. Lindler, Eileen Choffnes and George W. Korch, eds., *Biological Weapons Defense: Infectious Disease and Counterbioterrorism*, New York: Humana Press, 2005, pp. 351–359.

<sup>51</sup> “The One Health Initiative is a movement to forge co-equal, all inclusive collaborations between physicians, veterinarians, and other scientific-health and environmentally related disciplines, including the American Medical Association, American Veterinary Medical Association, the American Society of Tropical Medicine and Hygiene, the Centers for Disease Control and Prevention (CDC), the United States Department of Agriculture (USDA), and the U.S. National Environmental Health Association (NEHA).” See One Health Initiative website (accessed online May 12, 2011, at <http://www.onehealthinitiative.com/>).

Emerging and reemerging infectious diseases<sup>52</sup> are a leading cause of death worldwide.<sup>53</sup> Over the past two decades, approximately 40 newly emerging infectious diseases (many of which are zoonotic<sup>54</sup> in origin) have been identified.<sup>55</sup> The severe acute respiratory syndrome (SARS) outbreak in 2003 and the 2009 H1N1 influenza outbreak illustrate two recent novel infectious disease outbreaks that emerged with little forewarning. Reemerging infectious diseases include diseases such as tuberculosis that have developed antimicrobial drug-resistance or the appearance of infectious diseases in areas where they had not previously been endemic (e.g., dengue). Emerging and reemerging infectious diseases will remain a challenge to national health security for the foreseeable future.

The activities described in this chapter focus on priority threats, in particular, food and water safety, the health effects of climate change, and the impact of climate change on vector-borne and infectious diseases. Environmental hazards pose special concern to emergency responders and health care workers because of both the potential for worker vulnerability to many of these threats and the potential effect of such hazards on mitigation and response. In addition, disproportionate exposure to environmental hazards that can have serious adverse health effects persist in low-income and minority populations; action is needed to eliminate these disparities.

The misuse of life sciences information and technology refers to the deliberate exploitation of biological materials, knowledge, or technology for harmful purposes. Although research on dangerous pathogens and toxins is critical to the advancement of science and the development of countermeasures for infectious diseases, pandemics, and bioterrorism, the associated materials, knowledge, and technology also could be used for harmful purposes. This is known as dual use research.<sup>56</sup> The activities in this chapter attempt to strike a balance between implementing activities that minimize these risks without inhibiting legitimate research.

The following list represents the desired four-year outcomes that together will support the prevention and mitigation of environmental and other emerging threats. The activities described under each outcome below will be initiated, subject to availability of resources, to help achieve these outcomes.

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<sup>52</sup> An emerging infectious disease is either a newly recognized, clinically distinct infectious disease, or a known infectious disease whose reported incidence is increasing in a given place or among a specific population. See Mark S. Smolinski, Margaret A. Hamburg, and Joshua Lederberg, eds., *Microbial Threats to Health: Emergence, Detection, and Response*, Washington, D.C.: National Academy of Sciences, Institute of Medicine, Board on Global Health, 2003.

<sup>53</sup> World Health Organization, "The Top Ten Causes of Death," Fact Sheet No. 310, October 2008, accessed online May 12, 2011, at <http://www.who.int/mediacentre/factsheets/fs310/en/index.html>.

<sup>54</sup> Zoonotic infections are defined as "any disease or infection that is naturally transmissible from vertebrate animals to humans and vice-versa is classified as a zoonosis." See World Health Organization, "Zoonoses and Veterinary Public Health (VPH)," no date, accessed online May 12, 2011, at <http://www.who.int/zoonoses/en/>.

<sup>55</sup> World Health Organization, *World Health Report 2007: A Safer Future, Global Public Health Security in the 21st Century*, 2007, accessed online May 13, 2011 at <http://www.who.int/whr/2007/en/index.html>.

<sup>56</sup> See National Institutes of Health, Office of Biotechnology Activities, "Dual Use Research," no date, <http://oba.od.nih.gov/biosecurity/biosecurity.html>.

## **Four-Year Outcomes for Ensuring the Prevention, Mitigation, and Recovery from Environmental and Other Emerging Threats to Health**

- Enhanced use of risk analysis<sup>57</sup> and research to improve understanding and anticipation of environmental and other emerging threats
- Enhanced ability to detect and report environmental and other emerging threats early and to characterize them fully
- Improved mechanisms to prevent and mitigate environmental and other emerging threats
- Improved ability to respond and recover effectively and efficiently to incidents caused by environmental and other emerging threats

### **7.1 Enhanced Use of Risk Analysis and Research to Improve Understanding and Anticipation of Environmental and Other Emerging Threats**

Enhancing the Nation’s ability to anticipate and understand environmental and emerging threats requires enhancements to the techniques and application of risk analysis as well as research on these threats. Strengthened risk analysis techniques and greater understanding of environmental and other emerging threats through research may provide the ability to anticipate some of these threats and apply scarce resources more effectively.

The following activities will be undertaken in support of this outcome:

- **7.1.1 ASPR, CDC, DHS, and USDA will work with partners to strengthen and integrate risk analysis techniques for environmental and other emerging threats that affect national health security. (Potential Partners: DOC, DOD, DOE, DOI, DOJ, EPA, FDA, NIH, ODNI; local, state, territorial, and tribal agencies; private sector; academia.)**
  - Improve the sharing of risk and threat information and techniques for risk-based decisionmaking by the federal community with local, state, territorial, and tribal governments.
  - Enhance training on risk assessment, risk communication, and risk management of environmental and other emerging threats at the local, state, territorial, tribal, and federal levels.
  - Initiate efforts to expand the use of risk analysis tools and techniques for environmental and other emerging threats at the local, state, territorial, tribal, and federal levels.
  - Integrate and, to the extent reasonable, standardize risk analysis tools already in use for environmental and other emerging threats.
  - Develop and initiate testing on new techniques, tools, and templates for assessing exposures and risks and managing individual, community, and national risk from environmental and other emerging threats.

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<sup>57</sup> Risk analysis is “the process of assessment and management of risks”; see Homeland Security Institute, *Homeland Security Risk Assessment Volume I: Setting*, Arlington, Va., RP05-024-01a, June 16, 2006.

- Promote both integrated risk management approaches and site-specific approaches for preventing threats that could result in a potential biosecurity, biosafety, or biocontainment breach.
- **7.1.2 ASPR, CDC, DHS, DOI, FDA, NIH, and USDA will work with partners to leverage ongoing and completed research and coordinate agendas for new research to expand knowledge of factors contributing to the development of environmental and other emerging threats, both manmade and naturally occurring, including physical and social factors. (Potential Partners: DOD, DOE, DOJ, EPA, ODNI, OSTP, VA; academia.) Initial areas for consideration include:**
  - Emerging and reemerging infectious diseases
    - Improve understanding of factors contributing to zoonotic and agricultural diseases.
    - Improve understanding of factors contributing to antimicrobial resistance.
    - Promote understanding of the ecology and risk factors for the emergence of new viruses and virus and prion transmission from domestic and wild animals to humans and vice versa.
    - Increase understanding of the role of changing insect vectors and vector ecology.
    - Increase understanding of pathogenesis, immunology, and therapeutics for emerging and reemerging infections.
    - Improve mechanisms for surveillance and for informing the public health and medical communities about emerging and reemerging infectious diseases.
  - Environmental hazards
    - Develop improved models for and reports on the burden and cost of foodborne and waterborne illnesses and attribution of illnesses to particular food types or water sources/supply.
    - Increase understanding of the adverse health effects of exposure to physical and biologic environmental hazards.
    - Expand the role of basic, clinical, community-based, and integrated research in environmental health sciences.
    - Develop specific and sensitive markers of environmental exposure, early biological response, and genetic susceptibility.
    - Develop improved methods for exposure assessment and for hazard surveillance.
    - Increase understanding of the adverse health effects of climate change, including its effects on water sources and the incidence of waterborne illnesses.

## **7.2 Enhanced Ability to Detect and Report Environmental and Other Emerging Threats Early and to Characterize Them Fully**

Many of the activities required to detect, report, and characterize environmental and other emerging threats more fully are related to the activities discussed in the chapter on situational awareness (Strategic Objective 3). However, addressing environmental and other emerging threats requires some specific capabilities. For example, detecting zoonoses requires improved surveillance systems and data-sharing on both sides of the human-animal interface as well as improved understanding of the geographic, seasonal, and other factors that influence the transmission and emergence of these diseases. While these activities are clearly relevant to situational awareness activities generally, they provide a specific understanding of the potential risks that an environmental and emerging threat such as zoonoses pose to national health security. Similarly, detecting and characterizing environmental hazards in air, food, and water is an activity that generally supports situational awareness; however, exposures to hazards in air, food, and water require that specific surveillance activities are established to monitor and mitigate associated adverse health effects. Likewise, the immediate detection and characterization of occupational hazards to emergency responders contributes to situational awareness of an incident; however, a long-term monitoring effort is required to detect and mitigate the adverse health effects that may emerge beyond the immediate response.

The following activities will be undertaken in support of this outcome:

- **7.2.1 CDC, DHS, DOD, DOI, EPA, FDA, and USDA will work with partners to improve surveillance of foodborne, waterborne, airborne, plant, and animal pathogens and other contaminants. (Potential Partners: ASPR, DHS; local, state, territorial, and tribal agencies; private sector.)**
  - Build capacity in epidemiology, laboratory testing, informatics, and personnel resources.
  - Standardize best methods and new technologies for multistate foodborne and waterborne outbreak detection and response.
  - Implement new lines of communication and new approaches for health messaging.
  - Improve epidemiologic surveillance related to exposures to environmental and emerging threats, to include high-risk populations and occupations such as emergency responders and health care workers.
  - Improve interfaces and approaches to sharing surveillance information about environmental and emerging threats across local, state, territorial, tribal, federal, international, and private entities.
  - Improve information-sharing and systems integration across sectors, including clinical laboratories, health systems, public health epidemiologic investigations, and primary data collection systems, such as electronic laboratory reporting and electronic health record interfaces, individual providers, veterinary medicine, and plant and animal surveillance.

- Initiate systems for antimicrobial resistance surveillance for certain drug-resistant organisms.
- Examine and, if possible, improve environmental monitoring technology and standards for monitoring intentionally released contaminants in air.
- Improve surveillance for environmental and emerging threats (e.g., changes in vector patterns) generated by climate change.
- Evaluate and improve systems (i.e., with respect to accuracy, resource use, and utility) for monitoring outdoor and indoor air for air quality as well as intentional release of contaminants.
- **7.2.2 CDC will work with partners to monitor long-term health effects. (Potential Partners: DOL, NIH, SAMHSA; local, state, territorial, and tribal public health departments; nongovernmental, private, and academic organizations.)**
  - Monitor long-term health effects of exposed populations (e.g., exposure to emerging infections, intentionally released pathogens or contaminants, environmental toxins) to better characterize and mitigate adverse health effects.
  - Monitor the long-term health effects of climate change with respect to infectious, nutritional, and chronic disease.

### **7.3 Improved Mechanisms to Prevent and Mitigate Environmental and Other Emerging Threats**

A wide variety of mechanisms and activities are needed for preventing and mitigating environmental and other emerging threats. These threats arise from multiple sources, such as pathogens, chemicals, and contaminants, and can expose human and animal populations through numerous routes, including drinking water, food, air, and recreational waters, among others. Some of these threats are not fully understood, e.g., the factors that contribute to the emergence of a new virus or the actual impact that climate change will have on human health. Some of these threats arise from the numerous hazards that are ubiquitous in the environment, which can make it extremely difficult to determine how best to prevent and mitigate these risks or even which hazards, individually or in combination, pose the greatest risks to health. Other threats arise when a vector or pathway, such as food or water, is contaminated; the prevention and mitigation of such threats can involve activities at the source (e.g., farm) as well as activities related to safe handling, processing, packaging, distribution, retail, and ultimately consumption of the product causing the threat. Because environmental and other emerging threats arise from multiple sources and use multiple routes of exposure, the responses needed to address these threats must be multifaceted. An intergovernmental, multisector, and interdisciplinary approach that enlists a wide variety of partners in a vast mission space is needed to guide the Nation's health security prevention and mitigation activities. This approach is reflected in the wide variety of activities, leads, and partners identified below.

The following activities will be undertaken in support of this outcome:

- **7.3.1 CDC, EPA, FDA, and USDA will continue to work with partners to develop and test tools as part of an ongoing process to improve mechanisms for food and**

**water protection.**<sup>58</sup> (Potential Partners: ASPR, DHS, DOD, DOI, OSTP; local, state, territorial, and tribal agencies; private sector; academia.)

- Develop regulations and guidance to establish science-based preventive controls throughout the “farm-to-table” continuum.
- Reduce the risk of chemicals that enter products, the environment, and humans.
- Reduce human exposure to contaminants in drinking water, fish and shellfish, and recreational waters, including protecting source waters.
- Enhance efforts to improve the effectiveness of overseas food protection programs in high-risk areas to address the safety of food intended for U.S. consumption at the point of origin.
- Revalidate previously conducted vulnerability assessments and begin to conduct new assessments for food and feed commodities.
- Improve coordination among all partners to improve food protection by issuing regulations and additional guidance documents.
- **7.3.2 CDC, FDA, and USDA will continue to work with partners to improve control and mitigation of zoonoses and other infectious diseases. (Potential Partners: ASPR, CDC, DHS, DOD, DOI, DOS, FDA, NIH, OGA, OSTP.)**
  - Develop a plan to improve management of nontraditional<sup>59</sup> animal and plant importation into the United States and within the United States, including intentional and unintentional transport.
  - Improve efforts to manage and prevent the emergence and reemergence of infectious diseases affecting animals and humans through strategies such as capacity building and training.
    - Facilitate awareness and knowledge, communication, and exchange of information across disciplines relating to human and animal health.
    - Support domestic and international efforts to build a highly skilled and sustainable global workforce focused on animal-human interface issues.
    - Increase efforts to improve and integrate global human and animal health systems and infrastructures.
  - Develop and improve strategies for combating antimicrobial drug resistance in pathogens affecting animals, humans, or both.
    - Support detection and prevention activities related to health care, community, and veterinary antimicrobial resistance activities.

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<sup>58</sup> See, for example, a discussion of food safety on the FDA website (U.S. Food and Drug Administration, “Food Safety,” no date, accessed May 13, 2011, at <http://www.fda.gov/Food/FoodSafety/default.htm>) and a discussion of water protection on the EPA website (U.S. Environmental Protection Agency, “Our Waters,” no date, accessed May 13, 2011, at <http://water.epa.gov/type/>).

<sup>59</sup> Nontraditional plants and animals are those that are not typically found in a region; for information on plant and animal importation, see, for example, U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) (U.S. Department of Agriculture, “About APHIS,” no date, accessed online May 13, 2011, at [http://www.aphis.usda.gov/about\\_aphis/](http://www.aphis.usda.gov/about_aphis/)).

- Develop prevention strategies for antimicrobial resistance.
  - Encourage antibiotic stewardship programs.
  - Create an interagency working group to review policies on agricultural use of antibiotics.
- **7.3.3 ASPR, CDC, DHS, and DOL will work with partners to improve the safety of emergency response and recovery workers before and during incidents and in the recovery phase. (Potential Partners: EPA, OSTP.)**
  - Initiate efforts to ensure that all entities engaged in emergency response and recovery activities possibly involving hazardous materials meet OSHA Hazardous Waste Operations and Emergency Responder standard (29 CFR 1910.120) and other appropriate OSHA standards and encourage the incorporation of standards at least as effective as these into state and private sector plans.
  - Continue to pursue the development, improvement, and optimal use of personal protective equipment as well as administrative and engineering controls to protect workers.
  - Improve access to workplace MCMs, administrative and engineering controls, and protective equipment and training.
  - Improve procedures for evacuation, shelter-in-place, and response and recovery for workers and their families.
  - Enhance research and exposure monitoring of emergency response and recovery workers for acute and long-term health effects.
- **7.3.4 ASPR, CDC, DHS, DOL, EPA, the National Resource Council (NRC), and USDA will work with partners to identify, prevent, and mitigate adverse health effects related to environmental health hazards. (Potential Partners: DOD, ODNI, OSTP; state environmental protection agencies.)**
  - Continue to coordinate, integrate, and reassess risk-based approaches for identifying the highest-priority environmental health hazards and preventing their intentional and unintentional release.
  - Review and, where necessary, enhance regulatory practices and environmental codes based on risks to human health or sensitive natural resources.
  - Support efforts to identify and address disproportionately high and adverse human health or environmental effects experienced by low-income and minority populations, and build partnerships to benefit environmentally distressed communities.
  - Reduce the threats posed by climate change by reducing greenhouse gas emissions and taking actions that help communities and ecosystems become more resilient to the effects of climate change.
  - Achieve and maintain health-based air pollution standards and reduce risk from toxic air pollutants and indoor air contaminants.
  - Minimize unnecessary releases of radiation and be prepared to minimize impacts should unwanted releases occur.

- Prepare for and respond to accidental or intentional releases of contaminants and clean up and restore polluted sites.
- **7.3.5 ASPR, CDC, and USDA will work with partners to identify, minimize, and mitigate threats posed by potential breaches in biosafety and biosecurity, and the misuse of life sciences information and technology. (Potential Partners: DHS, DOD, DOI, DOJ, NIH, ODNI, OSTP.)**
  - Implement July 2, 2010, Executive Order, “Optimizing the Security of Biological Select Agents and Toxins in the United States.”<sup>60</sup>
  - Continue to improve the security and safety of work associated with select agents and toxins and other hazardous biological agents.
  - Encourage efforts to monitor and control the exchange of genetic material that could be used as the building blocks for select agents using synthetic biology.
  - Develop a national strategy to enable and ensure the appropriate training and technical competence of individuals who work in, oversee, support, or manage high- or maximum-containment research laboratories.
  - Improve and share strategies to ensure effective public communication, outreach, and transparency about biosafety and biocontainment issues.
  - Work to ensure oversight of dual-use research of concern in government, academic, and commercial laboratories.
  - Promote the ethical and responsible use of life sciences knowledge, research, materials, and technology to prevent their misuse.

#### **7.4 Improved Ability to Respond and Recover Effectively and Efficiently from Incidents Caused by Environmental and Other Emerging Threats**

The activities described below are targeted to improving capabilities for responding to and recovering from environmental and emerging threats. Many of these activities will also prove to be of value in confronting the broader range of threats to national health security.

The following activities will be undertaken in support of this outcome:

- **7.4.1 CDC, DHS, FDA, and USDA will work with partners to improve the ability of local, state, territorial, tribal, federal, international, and private-sector entities to respond to food-related threats, intentional or unintentional. (Potential Partners: DOJ, ODNI, OSTP; local, state, territorial, and tribal governments.)**
  - Coordinate and improve systems for recalls of unsafe products.
  - Develop consistent and accurate messages regarding unsafe food and medical products for dissemination to the public.
  - Enhance information-sharing and facilitate information collection, including suspicious activity reports, to improve mitigation of intentional threats to food supply.

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<sup>60</sup> Executive Order 13546, “Optimizing the Security of Biological Select Agents and Toxins in the United States,” July 2, 2010.

- **7.4.2 CDC, DHS, DOI, DOJ, EPA, FDA, and USDA will work with partners to enhance laboratory support for the management of environmental and other emerging threats. (Potential Partners: ASPR, DOD, OSTP; national science-based or laboratory-based organizations or associations.)**
  - Continue efforts to develop adequate laboratory capacity to support sampling of food, drinking water, wastewater, and surface and ground water.
  - Improve development and distribution of accurate rapid diagnostic tests for new emerging threats.
  - Improve microbial forensics.
  - Continue to develop laboratory networks to ensure adequate laboratory capacity by doing the following:
    - Develop and exercise a model enabling the risk-based prioritization of laboratory response gaps.
    - Promote government-wide coordination of analytical laboratory services.
    - Coordinate inter-network strategic and operational planning.
    - Identify accountabilities.
    - Encourage communication and information-sharing.
    - Promote resource optimization.
    - Coordinate response resources.
  - Create tools for examining and improving “total testing processes” for both environmental and clinical specimens.<sup>61</sup>
  - Provide support to expand electronic laboratory reporting systems from commercial, private, and public laboratories to local and state public health departments, electronic health record–public health interfaces, and other primary data collection systems.
    - Provide adequate training opportunities and personnel resources to maintain and enhance laboratory and public health interfaces.

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<sup>61</sup> The total testing process encompasses all components that complete a test, from the point of the question asked to the point of action on a result. According to the CDC, it includes three major phases: the preanalytic, analytic, and postanalytic.

## **OBJECTIVE 8: INCORPORATE POST-INCIDENT HEALTH RECOVERY INTO PLANNING AND RESPONSE**

In the aftermath of a large-scale incident with potentially negative health consequences, the recovery of affected individuals and families is critical. Health care and human services<sup>62</sup> address a wide array of life-sustaining and critical needs for medical care, behavioral health care, health surveillance, child care, senior services, and other support services. Following an incident, communities must focus on providing and, if necessary, restoring these essential services. A robust framework for post-incident recovery requires enhanced capabilities, which may require additional authorities at the local, state, territorial, tribal, and federal levels to meet the increased and prolonged needs created by the incident. The recovery period after an incident is typically lengthy and can be complicated by the occurrence of subsequent incidents.

Rebuilding the daily routines and social support networks that contribute to physical health, behavioral health,<sup>63</sup> and overall well-being is essential to allow individuals to regain their pre-incident level of self-sufficiency and become more resilient. Individuals and families may experience sadness, loss, and stress and may feel overwhelmed by the effort needed to rebuild their lives. Displaced and at-risk individuals—particularly children, seniors, people with disabilities, and other underserved populations—require continuity of care and access to services. Any gaps or delays in services might destabilize their health and well-being.

Recovery benefits from a community approach that focuses on fostering partnerships among individuals and their families; private-sector, nongovernmental, and academic organizations; and all forms of government (i.e., local, state, territorial, tribal, and federal). Successful post-incident health recovery requires a unified effort from all stakeholders with a role in the receipt or delivery of health care and human services in the affected region. In addition, community-based organizations, such as cultural groups, civic organizations, faith-based groups, schools, businesses, and others, can also play an important role. The involvement of a broad range of relevant local partners helps ensure that the needs and priorities of affected communities can be identified and addressed. A community approach also promotes integration and coordination of services for at-risk individuals, such as people with disabilities or behavioral health concerns, children, seniors, those with limited English proficiency, and other vulnerable or underserved populations.

Post-incident health recovery, as an integral part of national health security, builds on the foundation of informed and empowered individuals and communities who are resilient in the face of adversity. The extent to which the NHSS succeeds in fostering a culture of well-integrated preparedness, response, and recovery efforts has a direct effect on the performance of post-incident health recovery actions.

Limitations in transition planning from response to recovery, and from recovery back to a steady state, have produced challenges in coordinating the health care and human services sectors during the recovery period. These include the need to address interdependencies between the

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<sup>62</sup> In the context of recovery, the term *human services* is intended to be compatible with the term *social services* used in other national recovery documents.

<sup>63</sup> The term *behavioral health* is inclusive of both mental health and substance use/abuse issues.

health care and human services sectors as well as the housing, economic, environmental, and other infrastructure sectors that are essential for community recovery. Long-term issues and complexities can be addressed in part by expanding the traditional planning focus beyond the incident response phase to include recovery needs. Attention is needed to understand how existing resources can be better leveraged to provide adequate and appropriate health care and human services during recovery.

To address these issues, priority activities should focus on building recovery capacity and identifying lead coordination entities for the health care and human services sectors at the local, state, territorial, tribal, and federal levels. Consistent with national disaster recovery approaches and activities, these efforts include providing technical assistance to promote planning and partnerships, maximizing systems to assess recovery risk and evaluate progress toward recovery, and providing coordination to identify and leverage resources to support recovery. By emphasizing system strengthening, coordination, and leveraging of resources, this objective complements related national recovery initiatives while emphasizing how recovery planning needs to be integrated into broader planning and response activities.

The following list represents the desired four-year outcomes that together will help incorporate post-incident health recovery into planning and response. The activities described under each outcome below will be initiated, subject to availability of resources, to help achieve these outcomes.

<b>Four-Year Outcomes for Incorporating Post-Incident Health Recovery into Planning and Response</b>
<ul style="list-style-type: none"><li>• Promotion of recovery planning, assessment, education, partnerships, and scientific preparedness for health care, behavioral health care, and human services</li><li>• Coordinated access to health care, behavioral health care, and human services recovery resources after an incident</li><li>• Evaluation of health care, behavioral health, and human services recovery efforts to ensure that recovery needs are met and that lessons learned are incorporated into future response and recovery plans</li></ul>

### **8.1 Promotion of Recovery Planning, Assessment, Education, Partnerships, and Scientific Preparedness for Health Care, Behavioral Health Care, and Human Services**

A community's health, behavioral health, and human services needs after an incident depend both on its pre-incident state and the extent to which the community was affected by the incident. Experience has shown that recovery can be more difficult for at-risk individuals and culturally and linguistically diverse communities, as well as for communities that have not taken measures to mitigate pre-incident vulnerabilities.

The ability to reconstitute health care services is critical, either by rebuilding damaged facilities or providing alternate facilities to maintain continuity of care. Health care, behavioral health care, and human services bolster individual coping and social reengagement. Service access and

delivery can be promoted by developing agreements and partnerships to provide case management and supportive services, and by offering training to assist community health care, behavioral health care, and human services organizations to enhance the services they provide to foster and sustain recovery. In addition, partnerships with academia and research-sponsoring organizations can mobilize existing findings to support empirically based recovery preparedness and response as well as stimulate new avenues for study.

Traditional emergency planning has focused on the steps needed to prepare for and respond to incidents with potentially negative health consequences. However, the transition from response to recovery, roles and responsibilities during transition, and the operational processes needed to ensure an efficient transition have been less clearly articulated in national health security documents. Appropriate recovery planning—that is well integrated with response planning from the beginning of an incident—will help to expedite the restoration of the health and well-being of affected individuals and communities.

The following activities will be undertaken in support of this outcome:

- **8.1.1 ASPR and its recovery partners will promote capabilities for health care, behavioral health care, and human services recovery planning and assessment. (Potential Partners: ACF, CDC, the Federal Emergency Management Agency [FEMA], SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia.) Recommended plan content includes:**
  - Coordination with response entities to obtain risk assessments that identify and prioritize assets and facilities that may need to be restored or rebuilt and alternate care or services sites that may be used during or after an incident (including alternate service sites that may be available through private sector or nongovernmental resources)
  - Assessment of health recovery capacity available for national health security activities and additional resources that can be leveraged to bolster capacity
  - Delineation of roles and responsibilities among—and provision of guidance to—local, state, territorial, tribal, and federal governmental as well as nongovernmental partners to ensure continuity of health care, behavioral health care, and human services during recovery
  - Description of how health care, behavioral health care, and human services provided to residents during an incident positively affect recovery, and how efforts will be transitioned and coordinated from response entities to the governmental and nongovernmental organizations responsible for recovery and community restoration
  - Description of how health care, behavioral health care, and human services will be provided to affected individuals and communities during the longer-term recovery period
  - Written agreements and pre-written descriptions of recovery mission that can be used with stakeholders and health care, behavioral health care, and human services providers

- Incorporation into recovery planning of at-risk individuals and organizations that represent their needs
- Incorporation of recovery approaches and activities based on best practices and relevant, empirical research
- Description of how government-sponsored recovery activities will transition back to steady-state activities.
- **8.1.2 ASPR will promote partnerships among emergency management, health care, behavioral health care, and human services stakeholders by providing technical assistance and education to local, state, territorial, tribal, and nongovernmental partners. (Potential Partners: ACF, CDC, FEMA, OASH, SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia.)**
  - Encourage recovery education, outreach, and information-sharing to engage established organizations in recovery planning. Partners should include cultural, civic, and faith-based groups; private-sector businesses; academia; child care facilities and schools; senior services organizations; and local residents, primary care health workers, teachers, religious leaders, and community leaders.
  - Encourage access to training and information concerning health recovery needs to assist community health care, behavioral health care, and human services providers in enhancing and augmenting the services they provide to foster and sustain recovery.
  - Encourage partnership agreements to establish expectations, roles in recovery planning and decisionmaking, coordination and sequencing, distribution of recovery services, and identification of vulnerabilities that can be addressed through services such as case management.
  - Utilize established partnerships to alert individuals about the availability of post-incident services at community institutions, including informal gathering places (e.g., beauty parlors, cafes, child care facilities, and Head Start centers).
  - Provide education, outreach, and information and facilitate engagement to ensure that the health care, behavioral health care, and human services needs of at-risk individuals—including children, culturally and linguistically diverse communities, underserved communities, and rural communities—are addressed in recovery planning and partnerships.
  - Promote access to education and training to develop capacity to (1) address survivor, responder, and community concerns about stress, psychological issues, and addictions following an incident and (2) understand and address (using culturally and developmentally informed training materials and models) the functional needs of at-risk individuals in incident recovery.
  - Build on existing governmental and nongovernmental partnerships (or create new partnerships) to identify processes for pre-designating agencies that are likely to have a role in recovery.

## **8.2 Coordinated Access to Health Care, Behavioral Health Care, and Human Services Recovery Resources After an Incident**

Enhanced coordination of efforts at the local, state, territorial, tribal, and federal levels is needed to maximize the use of existing resources to support recovery for the health care, behavioral health care, and human services sectors. Efforts to leverage and maximize existing resources for recovery may entail identification of steady-state programs and grant resources applicable to recovery, as well as resources in the private sector. Pre-established frameworks encourage a more efficient, timely, and coordinated local response. Capacity assessments that include identification of organizations with recovery resources can be important recovery planning tools in this regard. In addition, in light of economic stressors and limited resources, guidance on how to leverage existing assets is needed.

The following activities will be undertaken in support of this outcome:

- **8.2.1 ASPR will work with national health security partners to maximize recovery resources and provide guidance to promote access to health resources that can be used to expedite recovery. (Potential Partners: ACF, CDC, DOI, FEMA, OASH, SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia.)**
  - Work with partners to catalogue available resources and identify major gaps in state and federal capabilities in order to recommend mechanisms for streamlined and targeted support, including leveraging of steady-state assets and programs to help with recovery.
  - Work with federal recovery partners, state and community representatives, and subject-matter experts to develop guidance and tools to assist local, state, territorial, tribal, federal, and nongovernmental stakeholders in accessing recovery information and resources.

## **8.3. Evaluation of Health Care, Behavioral Health Care, and Human Services Recovery Efforts to Ensure that Recovery Needs Are Met and Lessons Learned Are Incorporated into Future Response and Recovery Plans**

As the Nation works to establish and strengthen recovery plans, a robust effort is needed to integrate lessons learned into preparedness, response, and recovery activities. To continuously improve recovery efforts, data elements should assess recovery progress, quality, and outcomes. In addition, building common data elements into recovery planning will improve decisionmaking at local, state, territorial, tribal, and federal levels by increasing access to vital information.

The following activities will be undertaken in support of this outcome:

- **8.3.1 ASPR, in cooperation with federal recovery partners and subject-matter experts, will identify and review existing recovery research, data/evaluation systems, and documented lessons learned in order to establish parameters for post-incident health recovery and make recommendations for systematic improvement. (Potential Partners: ACF, CDC, DOD, FEMA, OASH, OSTP, SAMHSA, other pertinent HHS**

**agencies; local, state, territorial, tribal government; nongovernmental organizations; academia.)**

- Engage subject-matter experts, researchers, academia, and other stakeholders to identify key questions for recovery (these may include the aspects of response that promote effective recovery, risk and vulnerability factors that impede recovery, factors related to the functional needs of at-risk individuals, and indicators that can measure a community's progress toward recovery).
  - Continue to review and promulgate research and best practices to refine concepts, parameters, and actions for post-incident health recovery.
  - Examine health care, behavioral health care, and human services information and data elements collected through existing systems in order to recommend improvements and promote access to data among recovery stakeholders.
  - Provide guidelines for evaluation of recovery activities, based on existing emergency preparedness and public health best practices.
- **8.3.2 ASPR, in cooperation with federal recovery partners and based on national recovery guidelines, will promote incorporation of recovery-related lessons learned and research findings into response and recovery planning and preparedness activities and documents. (Potential Partners: ACF, CDC, DOD, DOI, FEMA, OASH, OSTP, SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia.)**
    - Promote scientific preparedness for recovery by analyzing and mobilizing related research findings to inform preparedness, response, and recovery planning.
    - Integrate local, state, territorial, tribal, federal, and nongovernmental recovery stakeholders into accessible lessons learned/after-action processes and systems and identify ways to disseminate lessons learned back to stakeholders.

## OBJECTIVE 9: WORK WITH CROSS-BORDER AND GLOBAL PARTNERS TO ENHANCE NATIONAL, CONTINENTAL, AND GLOBAL HEALTH SECURITY

The national health security of the United States is dependent on and interrelated with the health security of other nations. Infectious diseases potentially move freely across borders and around the globe through air, land, and sea transport of people and goods, all of which provide points of entry into the United States, whether arising as a result of natural phenomena or because they have been released accidentally or deliberately in the pursuit of war, terrorism, or crime. Chemical, biological, radiological, nuclear, and high-explosive (CBRNE) materials pose a similar risk to our national health security. Naturally occurring incidents, such as the earthquakes in Haiti, China, and Japan, or incidents in developing or fragile countries, can result in socio-political instability and/or economic stress that could negatively impact the public or economic health of the United States. The global nature of manufacturing and supply chains for food, water sources, medicines, diagnostics, vaccines, personal protective and medical devices, and other health care supplies can be vulnerable in international emergencies, thus requiring international cooperation to ensure the reliability and sustainability of their supply and their safety.

The World Health Organization's (WHO's) revised (in 2005) *International Health Regulations* (IHR) provide a strong framework for addressing important goals related to the health security of the United States and other countries. Reflecting the interrelatedness of global health security, the IHR calls for all countries to build their core public health capacities, work through regional networks, and provide technical assistance to other countries "to prevent, protect against, control and provide a public health response to the international spread of disease" while minimizing interference with trade.

To promote domestic health security, the United States must work and coordinate internally and with global partners to support and strengthen existing international structures to prepare, prevent, detect, respond to, mitigate, and recover from public health events through effective cooperation and capacity building consistent with the objectives of the IHR. Efforts must be appropriately aligned with those of other international stakeholders that provide resources, implementation support, and technical guidance for national and global health security capacity. In addition, the broad base of stakeholders provides an opportunity for the United States to learn from the experiences of other countries.

Global engagement allows the United States to harness the shared values of human health and health security around the world and to uphold the U.S. commitment to human dignity, respect for universal values, support to areas of mutual interest, and investment in the capacity of strong and capable partners, as espoused in the *National Security Strategy*.<sup>64</sup> International collaboration requires active efforts on the part of the United States and its domestic and international partners. This cooperation should have a strong foundation in health diplomacy, science, sharing of technical knowledge and lessons learned, and capacity building. In addition, consistent with the

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<sup>64</sup> The White House, *National Security Strategy*, May 2010, accessed online May 12, 2011, at [http://www.whitehouse.gov/sites/default/files/rss\\_viewer/national\\_security\\_strategy.pdf](http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf).

*National Strategy for Countering Biological Threats* and the HHS *Global Health Strategy*,<sup>65</sup> we should work with our international partners to frame the risks to our domestic health security and to global health security in a broader context and seek to identify helpful activities that countries can agree to undertake in a multilateral, bilateral, and/or unilateral manner.

The purpose of this strategic objective of the NHSS is to enable the United States to work toward the overarching goal of significantly enhancing national, continental, and global health security through international activities and partnerships by focusing on realistic, high-priority outcomes that can be achieved over the next four years. These activities build on a solid platform of existing relationships, mechanisms, and programming.

The following list represents the desired four-year outcomes collectively focused on enhancing national, continental, and global health security. The activities described under each outcome below will be initiated, subject to availability of resources, to help achieve these outcomes.

<b>Four-Year Outcomes for National, Continental, and Global Health Security</b>
<ul style="list-style-type: none"><li>• Cross-border communication, coordination, and collaboration with Canada and Mexico are strengthened.</li><li>• Communication, coordination, and collaboration with multilateral and additional bilateral partners on global health security are strengthened.</li></ul>

### **9.1 Cross-Border Communication, Coordination, and Collaboration with Canada and Mexico Are Strengthened**

Achieving health security at the national and continental levels means that the United States must work effectively with communities and partners on both sides of the U.S. borders with Canada and Mexico. This will require the assessment and implementation of optimal collaboration mechanisms to foster cross-border relationships of mutual trust as well as effective collaborations within the United States, from the local to national level and vice versa. U.S. engagement with the broader international community through intergovernmental and other multilateral organizations and initiatives promotes dialogue and cooperation on areas of common interest. Areas to explore for potential collaboration might include incident preparedness and response; border health security and event information-sharing; laboratory testing, diagnosis, and treatment; epidemiological investigation; and the control of infectious diseases and other health threats as well as coordination of the planning for and implementation of mutual assistance among participating partners in public health response to bioterrorism and all-hazards threats; and learning, and sharing of information about international efforts by participating in planning and policy meetings and joint operational exercises.

The following activities will be undertaken in support of this outcome:

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<sup>65</sup> National Security Council, *National Strategy for Countering Biological Threats*, November 2009; U.S. Department of Health and Human Services, *The Global Health Strategy of the U.S. Department of Health and Human Services*, 2011.

- **9.1.1. HHS will lead efforts to improve continental, pan-border, multisectoral planning, capacity-enhancement, preparedness, and response. (Potential Partners: DHS, DOD, DOS, USDA.)**
  - Establish a U.S.-government-wide forum for the departments and agencies working on health security to assess their current national and international health security efforts, future needs, and potential collaborations, while building on existing bilateral, trilateral, and regional cooperation.
  - Assess border-related health security issues and develop strategies to address current gaps and needs through the Pan Border Public Health Preparedness Council and the U.S.-Mexico Border Health Commission with U.S. border states, localities, territories, and tribes as well as professional public health and medical organizations.
  - Develop and implement an action plan for the 2011 North American Plan for Avian and Pandemic Influenza (NAPAPI) under the framework of the North American Leaders Summit.
- **9.1.2 HHS, DOD, the U.S. Agency for International Development (USAID), and USDA will continue to lead and coordinate efforts to support the operational development of cross-border early warning surveillance and situational awareness reporting systems. (Potential Partners: DHS, DOI, DOS.)**
  - Continue to provide technical support for capacity-building within existing U.S. and non-U.S. government networks and partnerships for laboratory-supported surveillance and control of human and animal diseases with a focus on physical facilities and layout; biosafety and biosecurity capabilities; availability, quality assurance, and mastering of laboratory equipment, techniques, and processes; accessibility to reagents/supplies; and safe collection, transport, and transference of samples and specimens.
  - Strengthen partnerships between the human and animal health sectors to improve zoonotic disease surveillance and response, including technical collaboration to laboratory networks for detection capacity, confirmatory testing, and communication of positive findings and information dissemination for prompt notification and decisionmaking capability.

## **9.2 Communication, Coordination, and Collaboration with Multilateral and Additional Bilateral Partners on Global Health Security Are Strengthened**

HHS plays a significant role in establishing, implementing, and evaluating science-based standards, norms, and guidance across diverse areas of global health. By contributing this expertise and leadership, HHS supports both bilateral and multilateral efforts to improve quality of care, facilitate communication and collaboration, make maximum use of local capacity, and encourage innovation. Working with WHO and other United Nations bodies, HHS shares U.S. standards with the global community, assists countries and private companies to understand and comply with U.S. laws and health and safety standards, and supports multilateral efforts to establish and implement such norms. By participating in these processes, the United States has

the opportunity to learn from our partners and to strengthen and improve our own health policies and services.

These multilateral activities also reinforce the Nation’s extensive bilateral engagements and underscore the emphasis on addressing local needs and building local capacity to ensure a sustainable impact. These efforts reflect a number of broader HHS goals, including efforts to advance science and innovation, strengthen infrastructure and the workforce, and improve the integrity and accountability of programs.

- **9.2.1 HHS will lead interdepartmental coordination in United States to support the World Health Organization. (Potential Partners: USAID, DHS, DOS, USDA.)**
  - Strengthen U.S. relationships with WHO headquarters along with regional and country offices; other relevant programs within the United Nations system as appropriate.
  - Strengthen situational awareness and early-warning reporting infrastructure across a broad range of domestic and international partners, including technical support to develop and/or strengthen national IHR core capacities and to develop and implement standardized procedures and practices for risk management and communications.
  - Support WHO in coordinating activities for a global network for ports, airports, and ground crossings for rapid information exchange and coordinated response.
  - Develop a model for a global forum for international aviation and maritime travel industry associations, governments, and WHO for shared protocols for illness detection, notification, and response.
  - Coordinate and guide, on behalf of the United States, activities and efforts under the memorandum of understanding between the United States and the WHO on global health security.
- **9.2.2 HHS, DOS, and DOD will lead interdepartmental coordination on multilateral engagements.**
  - Lead policy and technical collaborations with like-minded countries through the Global Health Security Initiative (GHSI) and support the development of its three-year strategic plan to advance health security matters of common interest, including sharing situational awareness and response plans, and scientific collaborations on preparedness and response.
  - Support relevant biological nonproliferation activities that promote health security under the “Global Partnership Against the Spread of Weapons and Materials of Mass Destruction.”
  - Support U.S. commitments under treaties relevant to global health security and continue to work to reinvigorate cooperative international bio-engagement programs to reduce threats (including the IHR and the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological [Biological] and Toxin Weapons and on Their Destruction, which is usually referred to simply as the “BWC”).

- Support the national and international implementation of the United Nations Security Council Resolution 1540 (2004) under Chapter VII of the United Nations Charter (on April 28, 2004), which mandates states, inter alia, to refrain from supporting by any means nonstate actors from developing, acquiring, manufacturing, possessing, transporting, transferring or using nuclear, chemical, or biological weapons and their delivery systems.
- **9.2.3 HHS will lead interdepartmental coordination on additional strategic bilateral partnerships.**
  - Support U.S. commitments under international agreements relevant to global health security.
  - Strengthen situational awareness and early-warning reporting infrastructure across a broad range of domestic and international partners, including technical support to develop and/or strengthen national IHR core capacities and to develop and implement standardized procedures and practices for incident communications.
  - The United States will consider opportunities for supporting WHO and other international partners in regional or sub-regional approaches to capacity building in those countries unlikely to meet national core capacity requirements by the IHR target date.
  - Explore potential expansion of the Joint Investigation to Bioterrorism Threats and Attacks training program by CDC and FBI or other appropriate host country public health epidemiological and criminal investigations joint partnerships in training as part of a national health security training curriculum.
  - Maintain the CDC's Field Epidemiology and Laboratory Training Program (FELTP) model to countries with training for laboratory technicians to improve laboratory diagnostic capability and integration with epidemiologic functions.
  - Identify and promote venues for the exchange of U.S. and foreign epidemiologists, laboratory staff, information technologists, and policymakers to participate in on-the-job training for extended periods (e.g., 1-2 years) at leading academic institutions, and public health and medical organizations in the United States and abroad.
- **9.2.4 HHS will lead efforts to develop public health international emergency and assistance frameworks. (Potential Partners: DHS, DOS, DOD, USAID.)**

The United States should work in conjunction with international partner organizations and other countries to strengthen current plans or develop new ones for international response to incidents wherever and however they may arise, including with regard to children and at-risk individuals.

  - Develop and strengthen policies and operational frameworks to share public health and medical personnel and countermeasures for chemical, radiological, nuclear, and biological threats, including pandemic influenza, to aid decisionmaking in response to an international request for assistance.
  - Develop and implement a policy and operational emergency assistance framework to share medical countermeasures for chemical, radiological, nuclear,

and biological threats, including pandemic influenza, to use when there is a decision to do so during incidents with potentially negative health consequences.

- Develop and implement a policy and operational emergency assistance framework to share public health and medical personnel to counteract chemical, radiological, nuclear, and biological threats, including pandemic influenza, for use when there is a decision to do so during incidents with potentially negative health consequences.
- Develop and exercise frameworks for providing international assistance in response to bilateral requests during emergencies.
- **9.2.5 HHS, DOD, and USDA will lead efforts to enhance laboratory biosafety and biosecurity practices. (Potential Partners: DHS, DOS, OSTP.)**
  - Continue to support national and international efforts to manage infectious materials safely within the laboratory, in an effort to reduce or eliminate exposure to potentially infectious substances (biosafety) and to protect against loss, theft, diversion, or intentional misuse of microbiological pathogens (biosecurity).
  - Continue to work with WHO and national and regional partners to promote the development of guidance on best practices and safe transport of infectious substances; conduct international trainings, assessments, and site visits; and sponsor international biosafety symposia.
- **9.2.6 HHS will lead efforts to incorporate lessons learned and identify remaining gaps in international pandemic influenza preparedness. (Partners: USAID, DOD, USDA, DOS.)**
  - HHS will coordinate its investment in international influenza preparedness and response capacities to improve U.S. and international collaborations in the fight against seasonal and novel influenza viruses' threats and pandemics.
  - Develop and implement an action plan for the 2011 North American Plan for Avian and Pandemic Influenza (NAPAPI) under the framework of the North American Leaders Summit.
  - Develop an HHS-wide international influenza strategy and lead U.S. coordination and collaboration in international pandemic preparedness and response.

**OBJECTIVE 10: ENSURE THAT ALL SYSTEMS THAT SUPPORT NATIONAL HEALTH SECURITY ARE BASED ON THE BEST AVAILABLE SCIENCE, EVALUATION, AND QUALITY IMPROVEMENT METHODS**

This objective seeks to identify, better utilize, integrate, and begin to put into place the processes and infrastructure needed to ensure that the best available evidence base is considered and that evaluation and quality improvement methods are part of standard operating procedures for all systems that support national health security. By leveraging existing work and putting into place standard processes and infrastructure, the Nation can begin to systematically apply a science-based approach to policy making and practice. Additionally, improving health security systems requires evaluation of progress toward achieving strategic goals, objectives, and capabilities, and integration of quality and continuous improvement processes into all national health security efforts at all levels.

The federal government has an important role in implementing the activities and achieving the outcomes of this strategic objective. However, successful implementation will require an ongoing effort among both federal and nonfederal government partners as well as nongovernmental and private stakeholders. Each of these sectors has a role to play in contributing to the national health security evidence base and should strive to incorporate related evaluations and quality improvement mechanisms into their business processes. This strategic objective seeks to build on and deepen intergovernmental and inter-sector collaborations and establish mechanisms to ensure that the available evidence base, methodologies for conducting evaluations, and quality improvement tools are translated into practice. In addition, this objective reflects the need for ongoing partnerships and processes aimed at continuously improving policies, plans, procedures, capabilities, decisionmaking, and ultimately outcomes related to national health security.

The four-year outcomes described in the box below apply to all NHSS capabilities and will help guide the national efforts to achieve this strategic objective. The activities described under each outcome below will be initiated, subject to availability of resources, to help achieve these outcomes.

**Four-Year Outcomes for Ensuring That All Systems Supporting National Health Security Are Based on the Best Available Evidence Base, Evaluation, and Quality Improvement Methods**

- Efforts to improve the evidence base and evaluation are developed through meaningful interagency, inter-sector collaborations.
- National health security is increasingly informed by an evidence base.
- National health security can be measured, evaluated, studied, and improved via a coordinated set of performance measures and standards.
- Key stakeholders develop and use tools to ensure continuous improvement of systems supporting national health security.

## **10.1 Efforts to Improve the Evidence Base and Evaluation Are Developed Through Meaningful Interagency, Inter-Sector Collaborations**

Efforts to improve the evidence base and evaluation will require the involvement of a wide range of governmental and nongovernmental stakeholders. Thus, establishing inter-sector collaboration among local, state, territorial, tribal, federal, and nongovernmental organizations, as well as private entities, is the focus of the first outcome. Progress in achieving this outcome will be characterized by regular and meaningful collaboration among these sectors.

The following activities will be undertaken in support of this outcome:

- **10.1.1 HHS will collaborate with a partnership of federal agencies to implement all elements of the Presidential Policy Directive 8 on National Preparedness. (Potential Partners: Other federal agencies.)**
  - Identify the core capabilities necessary for national health security and an approach to assess operational readiness of these capabilities, with clear, objective, and quantifiable performance measures, against target capability levels.
- **10.1.2 ASPR and DHS (Potential Partners: Health care organizations; local, state, territorial, and tribal public health agencies) will work under the framework of the National Infrastructure Protection Plan (NIPP) to coordinate across all critical infrastructure sectors, including the health care and public health sectors, to:**
  - Develop evidence-based measures and report on progress related to critical infrastructure protection programs in the *Health Care and Public Health Sector Annual Report* and *National Annual Report*.
  - Assess capability gaps across all critical infrastructure protection sectors through a joint Research and Development Work Group of Sector Coordinating Council (SCC) and Government Coordinating Council (GCC) members to determine the potential impact for the health care delivery and public health sectors.
  - Report capability gaps in the *Sector Annual Report* across all critical infrastructure protection sectors that potentially affect the health care delivery and public health sectors and use the report as the basis for future research and development activities.
- **10.1.3 ASPR, CDC, HRSA, DHS, and DOT/NHTSA will coordinate the identification of national health security capabilities and related measures for grant and cooperative agreement programs through the Interagency Preparedness Council and Interagency Preparedness Group.**
- **10.1.4 ASPR (Potential Partners: Local, state, territorial, tribal, and federal agencies; nongovernmental organizations) will establish an NHSS Evaluation and Measurement Working Group and seek input from governmental and nongovernmental experts on the following:**
  - Coordinate and advise on what should be measured and identify existing measures and data sources that can be used for the purposes of measuring progress toward

achieving each of the ten NHSS strategic objectives and national health security overall.

- Coordinate the development of guidance for identifying priorities for measurement, selecting candidate measures, developing measures, vetting and refining measures, piloting measures, collecting and analyzing data, and recommending the decommissioning measures related to the NHSS.
- Coordinate and advise on the development of a methodology for, and begin a quadrennial NHSS review to meet, the statutory requirement to submit the next NHSS to Congress.

## **10.2 National Health Security Is Increasingly Informed by an Evidence Base**

Wherever possible, evidence from research and evaluation studies should inform policy, guidance, technical assistance, standards, performance measures, and ultimately practice. A range of governmental and nongovernmental organizations are already investing in research and evaluation on national health security. These data and findings need to be identified and better utilized to inform practice. In addition, gaps in the knowledge base need to be identified and addressed through coordinated approaches to research.

The following activities will be undertaken in support of this outcome:

- **10.2.1 ASPR, CDC, FDA, NIH, and other HHS divisions will review ongoing and completed research within HHS to understand the available knowledge base and to identify significant gaps. (Potential Partners: AHRQ, other HHS divisions, OSTP.)**
- **10.2.2 ASPR, CDC, FDA, NIH, and other HHS divisions will coordinate to leverage existing research related to national health security, establish HHS's national health security research priorities, develop a plan to fill identified gaps in the knowledge base, and advocate for or identify resources to carry out the necessary research. (Potential Partners: AHRQ, other HHS divisions, OSTP.)**
- **10.2.3 ASPR (Potential Partners: Local, state, territorial, tribal, and federal agencies; nongovernmental organizations) will engage governmental and nongovernmental stakeholders to do the following:**
  - Define the major components of a scientific capability to support all-hazards response.
  - Develop a methodology for conducting science in support of all-hazards response.
  - Recommend the supporting infrastructure required to identify and integrate available evidence-base to support all-hazards response.
  - Reduce barriers to the rapid collection and sharing of data in support of all-hazards response.
  - Coordinate funding for critical research in support of decisionmaking during an emergency incident.

- **10.2.4 Through NIH, HHS (Potential Partners: Local, state, territorial, tribal and federal agencies) will establish a Public Health Emergency Research Review Board (PHERRB), a national institutional review board (IRB), to do the following:**
  - Facilitate the ethical conduct of research involving human subjects.
  - Expedite the review of research protocols.
  - Provide oversight for critical research to develop effective clinical and public health interventions in the context of emergency incidents and public health emergencies.
- **10.2.5 ASPR and CDC will enhance their “fusion” capabilities to gather, assimilate, analyze, share, and report on data to ensure that the best available information supports planning and that required information is available as quickly as possible and shared to the maximum extent practicable given operational security requirements with local, state, territorial, tribal, and federal partners to support emergency decisionmaking. (Potential Partners; DHS; local, state, territorial, tribal, and federal agencies.)**

### **10.3 National Health Security Can Be Measured, Evaluated, Studied, Reported, and Improved Via a Coordinated Set of Performance Measures and Standards**

Developing evaluation methodologies and performance measures is critical for assessing and reporting on progress toward achieving national health security. The activities related to this outcome will largely leverage and build on existing performance measures and data sources to assess progress toward achieving national health security and implementation of the *Implementation Plan*.

The following activities will be undertaken in support of this outcome:

- **10.3.1 ASPR (Potential Partners: Other federal agencies) will use the NHSS Evaluation and Measurement Working Group (see 10.1.4) to perform the following activities:**
  - Identify existing measures and data sources that can be used to measure the ten NHSS strategic objectives and progress toward achieving national health security.
  - Identify gaps in measures and data sources that can be used to measure progress toward achieving each of the ten NHSS Strategic Objectives as well as national health security overall and advise on a methodology for filling them.
- **10.3.2 Leads and co-leads for NHSS *Implementation Plan* activities will establish indicators of implementation, document baselines, and report to ASPR 12 months after approval of this document, and annually thereafter on progress toward implementation. (Potential Partners: Other federal agencies.)**
- **10.3.3 ASPR will begin a quadrennial NHSS review to meet the statutory requirement to submit an updated NHSS to Congress.**

## **10.4 Key Stakeholders Have Tools to Continuously Improve National Health Security**

Standards and performance measures can identify gaps in health security, but by themselves they cannot close those gaps. Quality improvement tools and other similar tools offer a means of identifying and closing performance gaps by understanding and measuring performance, identifying solutions to performance shortfalls, and implementing changes to improve outcomes. Greater use of these tools in national health security can provide a systematic and effective approach to improving the ability to prevent, protect against, mitigate, respond to, and recover from incidents.

The following activities will be undertaken in support of this outcome:

- **10.4.1 ASPR, CDC, DHS, DOT/NHTSA, and HRSA will engage relevant stakeholders to identify evidence-based practices to improve performance of systems supporting national health security. (Potential Partners: Local, state, territorial, tribal, and federal agencies; nongovernmental organizations; private sector.)**
- **10.4.2 ASPR and CDC (Potential Partners: Local, state, territorial, tribal and federal agencies; nongovernmental organizations; private sector) will encourage the following, through cooperative agreement guidance and technical assistance:**
  - Greater utilization of existing quality improvement programs, tools, and techniques with demonstrated success to improve performance of systems supporting national health security.

Peer-to-peer review and sharing of quality improvement programs, tools, and techniques to improve performance of systems supporting national health security.

APPENDIX A. ACTIVITIES FOR NATIONAL HEALTH SECURITY WITH LEAD AND PARTNER AGENCIES

The table below provides a summary of objectives, outcomes, activities, and leads, co-leads, and potential partners for *Implementation Plan* activities. Leads and co-leads are responsible for coordinating the implementation of activities, identifying realistic milestones and appropriate indicators for measuring implementation, and reporting on the status of implementation. Potential partners represent stakeholders and institutional expertise and resources that leads and co-leads may engage to accomplish objectives, outcomes, and activities.

**Objective 1: Foster informed, empowered individuals and communities.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
1.1. Individuals and communities have access to health, public health, and behavioral health information and are able to effectively incorporate risk information into plans supporting national health security.	<i>1.1.1. Convene a partnership of federal agencies and work with nonfederal partners to identify pilot projects to develop messages that promote citizen action and participation in whole-of-community health security planning.</i>	ASPR	ACF, AOA, CDC, DHS, DOD, DOI, OD, ONC, OSG, OCVMRC; local, state, territorial, and tribal governments; nongovernmental organizations, private sector
	<i>1.1.2. Convene a partnership of federal agencies and work with nonfederal partners to build on existing efforts to access information about engaging community-based organizations (e.g., cultural, civic, faith-based groups, schools, businesses) and social networks to develop and disseminate preparedness information and/or supplies.</i>	ASPR	ACF, CDC, DHS, DOI, OSG, OCVMRC; local, state, territorial, and tribal governments; nongovernmental organizations

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
1.2. Community members, including at-risk individuals, utilize health, public health, and behavioral health information about health threats and behavioral health risks to prevent, protect against, mitigate, respond to, and recover from incidents and know where to turn for help for both themselves and their neighbors.	<i>1.2.1. Convene a partnership of national health security entities to identify promising practices for the development and use of health security risk assessments to promote community empowerment in health security planning.</i>	ASPR	CDC, DHS, DOI, IGA, ONC; local, state, territorial, and tribal governments; nongovernmental organizations; private sector
	<i>1.2.2. Work with partners to identify promising practices for the use of risk assessment and risk communication tools at the community level in ways conducive to awareness of health risks and involvement in health security planning by community members.</i>	ASPR	CDC, DHS, DOC, DOI, HRSA, IGA, OASH, OCR, OD, CFBNP, SAMHSA; planning group comprised of local leaders representing government and nongovernmental organizations
1.3. Partnerships and integrated cross-sector plans are in place at the community level.	<i>1.3.1. Convene a partnership of federal agencies and work with nonfederal partners to identify and promote promising practices in active involvement of governmental and nongovernmental organizations, including professional organizations and the private sector, in local emergency planning committees or other relevant bodies with a role in national health security.</i>	ASPR	ACF, ASPE, CDC, DHS, DOI, OASH; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; local leaders (e.g., from public health and lead nongovernmental organizations); academia; training centers
	<i>1.3.2. Work with partners to identify key indicators of community resilience capacity-building.</i>	ASPR	ACF, AOA, CDC, DHS, DOI, IGA, IHS, OASH, OCR, OD, CFBNP, SAMHSA; local, state, territorial, and tribal governments; nongovernmental organizations; professional and governmental associations; academia

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
1.4. Social networks are leveraged to enhance community education, awareness, and response.	<i>1.4.1. Convene a partnership of federal agencies and work with nonfederal partners involved in national health security, to create a pilot project to develop tools to assist community-based social networks in providing leadership in disseminating risk information, building resilience, and promoting participation in community-level health security planning.</i>	ASPR	ACF, ASPE, CDC, DHS, ONC; local, state, territorial, and tribal governments; nongovernmental organizations; local leaders (e.g., from public health and lead nongovernmental organizations); academia; training centers

**Objective 2. Develop and maintain the workforce needed for national health security.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
2.1. Staff and volunteers can perform their roles and responsibilities safely, efficiently, and effectively during prevention, protection, mitigation, response, and recovery.	<i>2.1.1. Work with partners to prioritize and develop examples of competency-based knowledge and skills that could be included in job descriptions for public health, health care, and other national health security personnel and interprofessional health and supporting teams (e.g., physicians, nurses, behavioral health care providers, allied health professionals, EMS providers, emergency planners, public health emergency public health emergency logisticians, security providers, pharmacists, communication specialists, epidemiologists and veterinarians).</i>	ASPR	CDC, DHS, DOT/NHTSA, HRSA; local, state, territorial, and tribal agencies, private sector employers, professional organizations
	<i>2.1.2. Adhere to and advise partners on NIMS compliance training requirements in accordance with prescribed roles and functions within the incident management framework during an exercise or real incident.</i>	ASPR, CDC, DHS, USDA	DOT/NHTSA, FDA, HRSA, OASH; local, state, territorial, and tribal agencies

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>2.1.3. Provide guidance for training staff and volunteers to serve in a variety of public-health-related national health security roles based on the needs of the incident response.</i>	CDC	HRSA, DHS, DOT/NHTSA; local, state, territorial, and tribal agencies; private sector
2.2. Staff and volunteers have received competency-based national health security training.	<i>2.2.1 Continue leading the Federal Education and Training Interagency Group (FETIG), which is responsible for coordinating the implementation of applicable laws and executive directives related to core competencies and education and training standards, as directed by the Homeland Security Presidential Directive on Public Health and Medical Preparedness, and the Pandemic and All Hazards Preparedness Act (PAHPA). The FETIG provides advice to the National Center for Disaster Medicine and Public Health (NCDMPH) housed by the Uniformed Services University of the Health Sciences. The NCDMPH leads federal and coordinates national efforts to develop and propagate core curricula, education, training, and research in all-hazards disaster health.</i>	ASPR, DOD	DHS, VA, DOT/NHTSA, USDA, DOS, DoED, DOL
	<i>2.2.2. Continue ongoing partnerships with colleges, universities, and employers to identify and assess existing national health security–related courses and learning opportunities for staff and volunteers, identify priorities for new or improved courses and opportunities, and develop standards to guide future efforts.</i>	ASPR, CDC, DHS, NCDMPH	DOD, DOEd, DOT/NHTSA, HRSA, OASH, ONC, VA, USDA; private sector; academia

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>2.2.3. Synthesize existing data from research and other sources to generate national health security competencies and develop new methods as needed to identify core national health security competencies that are common across functional roles for all members of the national health security workforce.</i>	ASPR, HRSA, DHS, NCDMPH	ACF, ASPE, CDC, DOD, DOL, DOT/NHTSA, EPA, OASH, OCR, SAMHSA, USDA, VA; governmental associations; professional associations; academia
	<i>2.2.4. Adapt training to align with and support mastery of national health security competencies as they are developed</i>	ASPR, CDC, DHS	DOT/NHTSA, HRSA, NCDMPH, OSSI; local, state, territorial, and tribal governments; professional associations; academia
	<i>2.2.5. Deliver and disseminate existing and to-be-developed competency-based training.</i>	ASPR, CDC, DHS, HRSA	DOT/NHTSA, NCDMPH; professional associations, academia
	<i>2.2.6. Review existing learning management systems and assess the feasibility of creating an integrated and coordinated system.</i>	DHS	AHRQ, ASPR, CDC, DOD, DOEd, DOT/NHTSA, NCDMPH, ONC; professional associations; academia
2.3. Communities have an adequate number of staff and volunteers to provide national health security capabilities, and can access and mobilize additional personnel as needed.	<i>2.3.1. Identify the nature and scope of potential concerns from workers hesitant to serve during an incident; develop a plan to begin to address these concerns.</i>	ASPR, OASH	CDC, DHS, DOT/NHTSA, HRSA, OSG; professional associations
	<i>2.3.2. Work with partners to continue to conduct regular call-down/notification and assembly drills to test staff and volunteer mobilization.</i>	ASPR, CDC, DHS, OASH	HRSA, other federal agencies; local, state, territorial, tribal governments; professional associations
	<i>2.3.3. Encourage nonfederal entities to partner with higher education institutions serving culturally diverse populations to recruit a diverse workforce to national health security–related fields.</i>	CDC, HRSA	AHRQ, DOL, IHS, OCR, CFBNP; local, state, territorial, and tribal governments; private sector; academia

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>2.3.4. Reinforce the use of the cultural competency web-based e-learning programs (e.g., <a href="http://www.thinkculturalhealth.hhs.gov">http://www.thinkculturalhealth.hhs.gov</a>) for the national health security workforce.</i>	ASPR, OASH	HRSA
2.4. A systematic approach is in place to coordinate and manage health care delivery volunteers during an incident.	<i>2.4.1. Work with federal and nonfederal partners and employers to implement ongoing efforts to recruit and register volunteers.</i>	ASPR, OASH	AHRQ, CDC, DHS, DOE, DOI, DOL, DOT, HRSA, IHS, CFBNP; local, state, territorial, and tribal governments; private sector; academia; national membership organizations

**Objective 3. Ensure situational awareness.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
3.1. Common national approach to public health and health care situational awareness for national health security	<i>3.1.1. Work with partners to establish a governance and/or organizational structure model (which conforms to HIPAA requirements)) for public health and health care situational awareness activities in support of national health security.</i>	ASPR	CDC, DHS, DOD, DOI, DOJ, EPA, FDA, OCR, ONC, USDA, VA; local, state, territorial, and tribal governments; private sector; academia; relevant discipline associations
	<i>3.1.2. Work with partners to identify and address legal and policy barriers to establishing a common conceptual approach to situational awareness, building on existing efforts.</i>	ASPR, CDC, DHS	ASL, DOD, DOJ, IHS, OGC; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; academia; training centers

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>3.1.3. Work with partners to identify and address issues regarding local, state, territorial, tribal, and federal legal and policy barriers to releasing and sharing data, including who has authority to release data, what the barriers are to exchanging data, and what the approval time is for release, and to ensure that actions taken to address these barriers are consistent with requirements for protecting patient information.</i>	ASPR, CDC, DHS	ASL, DOD, DOJ, DOS, HIS, OCR, OGC, ONC; local, state, territorial, and tribal governments; nongovernmental organizations, private sector; academia; training centers
	<i>3.1.4. Work with partners to develop a taxonomy of decisions and decisionmakers (authority, sectors, levels of government) to assist in identifying who needs what information (and for what purposes), possibly as part of an information management plan.</i>	ASPR, DHS	CDC, DOD, DOI, DOJ, DOS, ONC, SAMHSA; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; training centers
	<i>3.1.5. Work with partners to assess the establishment of a consortium of local, state, territorial, and tribal health departments to compile and evaluate a suite of low-cost, easy-to-implement innovative practices that allow public health authorities to collect and analyze data relevant to national health security.</i>	ASPR, CDC	DHS, DOJ, DOS, FDA, OGC; local, state, territorial, and tribal officials; nongovernmental organizations; private sector; academia and research centers; training centers
	<i>3.1.6. In consultation with stakeholders across all sectors, draft a novel conceptual and technological approach, which will provide clear and consistent expectations for a situational awareness system, possibly through a set of guiding definitions and principles.</i>	ASPR, CDC, DHS	DOD, DOT, ONC, OSTP; local, state, territorial, and tribal officials; nongovernmental organizations; private sector; academia and research centers; training centers

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>3.1.7. Work with partners to draft a conceptual and technological approach for the processing and communicating of data and information for utilization.</i>	ASPR, DHS	CDC, DOD, OCR, ONC, OSTP; local, state, territorial, and tribal governments
3.2. Near-real-time awareness of evolving incidents with potentially negative health consequences	<i>3.2.1. Work with partners to build on existing situational awareness resources in all sectors by identifying existing capabilities across all relevant sources of information that can be used to generate actionable information.</i>	ASPR, CDC, DHS	DOD, DOI, DOJ, DOT, FDA, ODNI, ONC, OSTP, USDA, VA; local, state, territorial, and tribal governments
	<i>3.2.2. Work with partners to identify ways to strengthen and expand existing capabilities to disseminate and share national health security information quickly to the maximum extent practicable given operation security requirements.</i>	ASPR, CDC, DHS	DHS, DOD, DOI, DOJ, DOT, EPA, HRSA, OCR, ONC, USDA; local, state, territorial, and tribal governments; academia and research centers; training centers
3.3. Near real-time awareness of availability and location of resources before and during incidents with potentially negative health consequences	<i>3.3.1. Work with partners to identify and, where necessary and possible, explore aligning existing local, state, territorial, tribal, federal, and international governmental and nongovernmental systems across sectors, for providing awareness of resources before, during, and after an incident.</i>	ASPR	CDC, DOI, EPA, FDA, HRSA, OCR, ONC, OSTP, USDA; local, state, territorial, and tribal governments; nongovernmental organizations; hospitals and health care providers; training centers
	<i>3.3.2. Work with partners to develop and implement an integrated resource tracking strategy that works across sectors and capitalizes on existing resources, including identifying a minimal set of resource data that would be relevant and helpful among incident types and scenarios.</i>	ASPR, CDC, DHS	EPA, ONC, OSTP, USDA; local, state, territorial, and tribal governments; nongovernmental organizations; hospitals and health care providers; academia and research centers; training centers

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>3.3.3. Work with partners to identify and consider proprietary interests (e.g., for hospitals, pharmaceutical industry, large nationwide laboratories) that may inhibit incorporation of private resources, including approaches for carefully controlled data sharing and maintaining confidentiality of information.</i>	ONC	ASPR, CDC, DHS, DOJ, FDA, OGC; private industry associations
	<i>3.3.4. Work with partners, including private industry, to identify sources of data and information for sharing and potentially for integration to improve situational awareness.</i>	ASPR, DHS	CDC, DHS, DOJ, FDA, OGC, ONC; private industry associations
3.4. Effective coordination of health-related situational awareness	<i>3.4.1. Explore how state and major urban area fusion centers can enhance information sharing and situational awareness across the public safety, public health, emergency management and other domains.</i>	ASPR, CDC, DHS	DOJ; local, state, territorial, and tribal governments
	<i>3.4.2. Involve private and children's hospitals, laboratories, schools (to provide absenteeism data) 9-1-1, EMS, medical countermeasures adverse events systems, behavioral health systems, and other organizations in local, state, territorial, tribal and federal data-sharing and planning efforts for integrated situational awareness systems and encourage use of these systems as they become available.</i>	ASPR, CDC	DHS, FDA, HRSA, OGA, ONC; local, state, territorial, and tribal governments; nongovernmental organizations; hospitals and health care providers; research centers

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>3.4.3. Work with partners to support a collaborative environment for sharing situational awareness information.</i>	ASPR, CDC	DHS, DOD, DOS, EPA, HRSA OGA, USDA; local, state, territorial, and tribal governments; nongovernmental organizations; hospitals and health care providers; research centers

**Objective 4. Foster integrated, scalable health care delivery systems**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
4.1. Health care organizations are integrated with community medical, public health, behavioral health, human services, emergency management, public safety, and other partners and are able to respond to a rapid, temporary increase in demand.	<i>4.1.1. Work with partners to develop and align surge goals.</i>	ASPR, CDC, CMS, SAMHSA, FDA, HRSA	Health care organizations (e.g., hospitals, primary care physicians, public and private EMS agencies, long-term-care centers, community health centers/federally qualified health centers), accreditation organizations, state licensing agencies
	<i>4.1.2. Work with partners to provide guidance, tools and templates for use by health care organizations to improve their surge capacity.</i>	ASPR, CDC, DHS, SAMHSA, FDA, HRSA	Health care organizations (e.g., hospitals, primary care physicians, public and private EMS agencies, long-term-care centers, community health centers/federally qualified health centers)
	<i>4.1.3. Work with partners to consider, address, or develop standards for surge capacity for health care organizations.</i>	ASPR, CDC, CMS, FDA, HRSA	AHRQ, professional and accreditation organizations, state licensing agencies

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>4.1.4. Work with partners to align and enhance the role of health information technology and health information exchange in public health and medical emergency planning, response, and recovery activities (e.g., use of health information exchanges within the state to exchange lab results between provider systems and public health agencies.)</i>	ASPR, CDC, SAMHSA, DHS, FDA	ONC; local, state, territorial, and tribal public health agencies; health care organizations
	<i>4.1.5. Work with partners to develop strategies to facilitate the delivery of the most safe and effective level of care during an incident.</i>	ASPR, CDC, CMS, SAMHSA, FDA, DHS, DOT/NHTSA	AHRQ; local, state, territorial, and tribal public health agencies; health care organizations
	<i>4.1.6. Work with partners to explore appropriate payment options for services provided at alternate care sites during or after incidents.</i>	ACF, ASPR, CMS, DHS	Other federal agencies; local, state, territorial, and tribal public health agencies
4.2. Local and state governments promote regional emergency planning alliances and health care coalitions that are prepared to respond and recover from incidents that exceed the capabilities of individual health care organizations.	<i>4.2.1. Work with partners to align public health and medical national health security activities through federal grants and cooperative agreements, when available, to emphasize community approaches to health care (e.g., health care coalitions) in ways that are consistent with Affordable Care Act efforts and that represent the entire health care continuum, as a strategy to improve national health security outcomes and provide surge capacity beyond that of any individual organization.</i>	ASPR, CDC, DHS, DOT/NHTSA, HRSA	DOI; local, state, territorial, and tribal public health and human services agencies; health care organizations
	<i>4.2.2. Work with partners to ensure that their plans include consideration of at-risk individuals and maintenance of essential health care services for individuals requiring continuous health care outside of a hospital setting.</i>	ASPR, CDC, SAMHSA, DHS, IHS,	DOI; local, state, territorial, and tribal governments

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>4.2.3. Work with partners to explore policy incentives that encourage health care organizations to participate in regional emergency planning alliances and health care coalitions.</i>	ASPR, CDC, CMS, SAMHSA, HRSA, IHS	DOI; local, state, territorial, and tribal governments; professional organizations; nongovernmental organizations
	<i>4.2.4. Work with partners to promote exercises at the local, state, territorial, tribal, and federal governmental and community levels and encourage regional emergency planning alliance and health care coalition participation.</i>	ASPR, CDC, CMS, SAMHSA, DHS, DOD, HRSA, IHS	DOI; local, state, territorial, and tribal governments; health care organizations and coalitions; health security planning alliances
	<i>4.2.5. Work with partners through the critical infrastructure protection partnership framework to share information to the maximum extent practicable and identify issues for collaborative problem-solving.</i>	ASPR	Other federal agencies; local, state, territorial, and tribal governments; private sector
4.3. Local and state governments actively engage regional emergency planning alliances, health care coalitions, and health care organizations to develop ethical processes for the allocation of scarce resources during or after an incident with potentially negative health consequences.	<i>4.3.1. Work with partners to identify current efforts by states, academia, health care experts, biomedical ethicists, medico-legal experts, behavioral health experts, and others to develop frameworks and processes for allocating scarce resources during large-scale incidents.</i>	ASPR, CDC, FDA, OASH, IGA	State government, health care experts, biomedical ethicists, medico-legal experts, academia and research centers
	<i>4.3.2. Work with partners to foster the development of allocation of scarce resources frameworks and processes through federal grants and cooperative agreements.</i>	ASPR, CDC, DHS, HRSA	DOI; local, state, territorial, and tribal governments

Outcome	Activity	Lead	Potential Partners
<p>4.4. Local and state governments actively engage regional emergency planning alliances, health care coalitions, and health care organizations to regularly exercise, measure, and report (in a standardized manner) their ability to surge during and after incidents.</p>	<p><i>4.4.1. Work with partners to define terms and develop measures to assess a health care organization's capability to deliver medical care in response to an incident with potentially negative health consequences.</i></p>	<p>ASPR, CMS, HRSA</p>	<p>AHRQ, DHS, DOI, DOT/NHTSA; local, state, territorial, and tribal governments</p>
	<p><i>4.4.2. Work with partners to define terms to measure and assess a health care coalition's capability to deliver medical care in response to an incident with potentially negative health consequences.</i></p>	<p>ASPR, CDC, CMS</p>	<p>AHRQ, DHS, DOI, DOT/NHTSA; local, state, territorial, and tribal governments</p>
	<p><i>4.4.3. Work with partners to define terms to measure and assess a region's capability to deliver medical care in response to an incident with potentially negative health consequences.</i></p>	<p>ASPR, CDC, CMS, HRSA</p>	<p>AHRQ, DHS, DOD, DOI, DOT/NHTSA; local, state, territorial, and tribal governments</p>
	<p><i>4.4.4. Work with partners to define terms to measure and assess a state's capability to deliver medical care in response to an incident with potentially negative health consequences.</i></p>	<p>ASPR, CDC, CMS, DHS, DOT/NHTSA, HRSA</p>	<p>AHRQ, DOI; local, state, territorial, and tribal governments.</p>

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
4.5. Barriers to health care integration are identified and solutions are promoted to enable health care organizations, health care coalitions, and regional planning alliances to function effectively in the wake of an incident.	<i>4.5.1. Work with partners to identify current efforts to address the barriers that may arise during large-scale incidents; support a coordinated approach to addressing these issues; and develop clear and consistent guidelines for future incidents, as appropriate.</i>	ASPR, CDC, CMS, SAMHSA, FDA, IGA, OASH, OCR	DHS, DOD, DOI, DOT/NHTSA, ONC, OPM, VA; state governments, legal experts, academia
	<i>4.5.2. Clarify the legal authorities to grant waivers to facilitate the integration of health care organizations, health care coalitions and regional emergency planning alliances that are allowable under existing federal laws and regulations (e.g. authorities to grant waivers to authorize the emergency use of MCMs) and will provide awareness</i>	ASPR, CDC, CMS, FDA, OGC, OCR	None

**Objective 5. Ensure timely and effective communications.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
5.1. Information exchange with the public occurs on an ongoing basis.	<i>5.1.1. Research potential successful strategies and practices for receiving information from the public both routinely and during an incident.</i>	HHS	ACF, AOA, ASPA, CDC, CMS, DHS, DOI, FDA, IHS, NIH, ONC, SAMHSA; local, state, territorial, and tribal governments

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>5.1.2. Work with partners to expand and promote existing communication networks that include health officials, behavioral health experts, community leaders, community-based organizations, other stakeholders, and the general public.</i>	HHS, DHS, DOD, VA	ACF, AOA, ASPA, ASPR, CDC, CMS, DOI, FDA, IHS, NIH, OCR, SAMHSA; local, state, territorial, and tribal governments; health officials; behavioral health experts; community leaders, community-based organizations, 9-1-1 authorities; first responders; the public
	<i>5.1.3. Work with response partners to develop and disseminate effective methods to monitor for and address rumors and misperceptions during an incident.</i>	HHS	ASPA, CDC, DHS, DOI, FDA; local, state, territorial, and tribal governments; professional associations; academia and research centers
5.2. Accurate, credible, understandable, and actionable information is provided to the public in a timely way.	<i>5.2.1. Work with partners to expand message content and make national health security messages (covering such topics as preparedness, response, and recovery) available in multiple formats and languages to stakeholders.</i>	ASPR, CDC	ASPA, DHS, DOI, FDA;; local, state, territorial, and tribal governments; professional associations, academia and research centers
	<i>5.2.2. Work with partners to build the capability to rapidly test and/or evaluate national health security messages so that they can be adapted as needed during an incident.</i>	CDC	ASPA, ASPR, DHS, DOI, FDA; local, state, territorial, and tribal governments; academia and research centers
	<i>5.2.3. Facilitate and incorporate evaluation research to evaluate the effectiveness of existing crisis and risk communication training programs; programs will be maintained, expanded, revised, or discontinued as warranted by study results.</i>	CDC	ASPA, ASPR, DHS, FDA; local, state, territorial, and tribal governments; academia and research centers

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>5.2.4. Work with partners to engage behavioral health subject matter experts in communication planning and message dissemination.</i>	SAMHSA	ASPA, ASPR, CDC, FDA; local, state, territorial, and tribal governments; academia and research centers
	<i>5.2.5. Work with partners to implement and/or maintain a training program in risk communication to train government leaders and partners in risk communications.</i>	HHS	ASPA, ASPR, CDC
5.3. Information provided to the public is coordinated and consistent across response and recovery organizations.	<i>5.3.1. Work with partners to continue to enhance public health and medical emergency support communication plans that coordinate public communication message development and dissemination strategy across all levels of government and with community partners.</i>	HHS, DHS	ACF, ASPR, CDC, CMS, DOI, FDA, IHS, SAMHSA; local, state, territorial, and tribal governments; nongovernmental organizations
	<i>5.3.2. Work with partners to test crisis and emergency risk communication plans through operations-based exercises as well as real incidents, and include relevant community partners in exercises.</i>	ASPR, CDC, DHS	FDA; local, state, territorial, and tribal governments; nongovernmental organizations
5.4. Culturally and linguistically appropriate information is exchanged with all segments of the target population, including at-risk individuals.	<i>5.4.1. Work with partners to collect best practices for identifying information needs, effective media channels, and trusted spokespersons for the range of population groups within a community.</i>	ASPA, ASPR, CDC	DHS, DOD, DOI, FDA; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; academia and research centers
	<i>5.4.2. Explore options for more effective use of media channels (including social media) in disseminating public health messages.</i>	HHS (ASPA, ASPR, CDC, SAMHSA)	DHS, DOI, FCC, FDA, ONC; local, state, territorial, and tribal governments; nongovernmental organizations; private sector; academia and research centers

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>5.4.3. Work with partners to translate relevant scientific research so that it is easily understandable for a range of populations and disseminate this guidance to local, state, territorial, and tribal personnel.</i>	CDC	AHRQ, AOA, ASPA, DHS, DOI, FDA, NIH, OCR, OSTP; private sector; academia and research centers
	<i>5.4.4. Work with partners to actively engage elected and nonelected community leaders in identifying and addressing any communication issues/concerns whenever possible.</i>	ASPR, CDC, DHS	DHS, DOI, FDA, OCR; local, state, territorial, and tribal governments; nongovernmental organizations; private sector
5.5. Secure, sustainable, interoperable, and redundant systems/equipment are in place to support a response.	<i>5.5.1. Coordinate emergency communications grant priorities and guidance across all U.S. government departments and agencies.</i>	ASPR, DHS	None
	<i>5.5.2. Facilitate and encourage research to identify innovative and effective strategies to encourage nongovernmental emergency responders (e.g., hospitals) to invest in interoperable communications technology.</i>	ASPR, DHS	ASPA, CDC, OSTP; academia and research centers
	<i>5.5.3. Work with partners to develop appropriate “communication caches,” i.e., collections of adaptable messages and other information that can be used by rapid assessment teams in developing communications after no-notice incidents such as earthquakes and chemical or biological attacks.</i>	ASPR, DHS	ASPA, CDC, FDA
5.6. Effective coordination and communication occur within and across response and recovery organizations.	<i>5.6.1. Ensure that public health and medical care emergency communication roles, responsibilities, and activities are coordinated and consistent across relevant response frameworks (e.g., National Response Framework).</i>	ASPR, DHS	CDC, FDA

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>5.6.2. Work with partners to integrate health care and public health organizations more fully into activities and programs run through the Office of Emergency Communications in DHS.</i>	DHS, HHS	ASPR, CDC; local, state, territorial, and tribal governments; professional associations, health care providers
	<i>5.6.3. Work with partners to implement and refine statewide Communication Interoperability Plans (SCIPs).</i>	ASPR, CDC, DHS	Local, state, territorial, and tribal governments; medical first responders; health care providers
	<i>5.6.4. Work with partners to foster and support relationships among all stakeholders representing the continuum of emergency communication, including the FCC (telecommunications providers and media), DOT (National 911 Program), and the Office of Emergency Communications (radio communication among first responders).</i>	ASPR, DHS, DOT/NHTSA, FCC	CDC, FDA, telecommunications providers, media; local, state, territorial, and tribal 9-1-1 authorities; emergency operations centers, first responders (law enforcement, fire services, EMS), hospitals, public health agencies

**Objective 6. Promote an effective countermeasures enterprise.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
6.1. Expanded and enhanced strategic collaboration with manufacturers of medical countermeasures	<i>6.1.1. Work with partners to catalyze the development of new MCMs across the spectrum of development from pre-clinical, testing, evaluation, and advanced development to manufacturing services.</i>	HHS (ASPR, CDC, FDA, NIH)	DOD and other government organizations; private sector; academia and research centers
	<i>6.1.2. Coordinate the determination of MCM requirements based on risk assessment.</i>	Relevant departments and agencies	Other federal agencies
6.2. Enhanced manufacturing surge capacity and use of flexible manufacturing, platform technologies, and an	<i>6.2.1. Work with manufacturers of MCMs to expand production capability and surge capacity through nimble, multiuse technology platforms/facilities.</i>	DOD, HHS	Manufacturers of MCMs

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
expanded product pipeline to more rapidly produce novel vaccines and medical countermeasures	<i>6.2.2 Work with partners to develop clear regulatory pathways along which manufacturers may develop their products from bench-top to approval.</i>	FDA	Other HHS agencies, DOD and other federal agencies; private sector; academia and research centers
6.3. Support for innovation for more durable and easy-to-administer medical countermeasures	<i>6.3.1. Work with partners to promote the development of MCMs that are simple to administer or and/or have an extended shelf life.</i>	DoD, HHS	Manufacturers of MCMs, health care organizations, public health agencies
6.4. Adequately stocked and positioned repositories of medical countermeasures and ancillary supplies	<i>6.4.1. Encourage continued collaboration regarding federal, state, local, regional and private MCM stockpiles and put in place systems that facilitate sharing and augment equitable and efficient MCM use.</i>	HHS	State and local governments, regional entities, private sector
	<i>6.4.2. Work with partners to align strategies and ensure adequately stocked and positioned repositories of MCMs and/or laboratory testing equipment and supplies, and devices.</i>	CDC	FDA and other federal agencies; local, state, territorial, tribal governments; private sector
	<i>6.4.3. Work with each state and its respective local health departments to develop plans to receive and distribute SNS medical products and medical supplies to local communities as quickly as possible, and to explore diverse distribution and dispensing strategies to best meet the needs of their populations.</i>	CDC	Local, state, territorial, and tribal health departments and other agencies
6.5. A well-informed policy that addresses the full spectrum of dispensing strategies, including strategies that enhance fair access to MCMs	<i>6.5.1. Analyze the efficacy and feasibility of pre-positioning personal or home stockpiles of oral antibiotics for certain groups of responders and subgroups of the public.</i>	HHS	None

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
6.6. Expanded capabilities of relevant multidisciplinary workforces to support rapid, effective, and appropriate medical countermeasures dispensing in response to a large-scale incident	<i>6.6.1. Work with partners to identify and enumerate the multiple classes of personnel designated within the broad classification of “responder” whose actions may be critical to preserving infrastructure and continuity as well as protecting the health and safety of others during or after an incident.</i>	DHS, HHS	Other federal agencies; local, state, territorial, and tribal governments; private sector; other response organizations
	<i>6.6.2. Work with partners to inform the capabilities of a workforce that is trained and routinely exercised in the knowledge and skills required to rapidly dispense appropriate MCMs to diverse communities.</i>	HHS	Other federal agencies; local, state, territorial, and tribal governments; private sector; other response organizations
	<i>6.6.3. Develop policies and strategies to ensure that this workforce is provided the appropriate MCMs to protect their health and safety. These strategies may include, as appropriate, pre-incident vaccination, access to worksite or community pharmacy MCM caches, or personal antibiotic stockpiles.</i>	HHS	None
	<i>6.6.4. Work with partners to ensure that local, state, territorial, and tribal public health officials and designated hospital authorities have sufficient knowledge of the contents and dispensing policies associated with the materiel from the SNS.</i>	CDC	FDA; local, state, territorial, and tribal public health departments
6.7. Improved education, communication, information-sharing, and transparency to help all citizens understand and participate in community-governed medical countermeasures dispensing and administration strategies	<i>6.7.1. To improve MCM dispensing, work with public health departments to enhance federal familiarity with local populations, such as understanding of the populations’ socioeconomic status, culture, housing, language needs, daily patterns of activity, movement and transportation patterns, and access patterns to emergency care.</i>	HHS	Local, state, territorial, and tribal public health departments

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>6.7.2. Support education, information-sharing, and transparency across government, the private sector, and the public to promote understanding, acceptance, and participation in MCM dispensing and administration strategies.</i>	HHS	DOD; local, state, territorial, and tribal public health departments; private sector; the public
	<i>6.7.3. Encourage public health officials to continue to work within their communities to discuss and inform mass MCM dispensing strategies, and to provide justification for selected approaches, given such factors as population demographics and vulnerabilities, exposure to agents, availability of MCMs, and other information which will educate the public and increase transparency of government.</i>	HHS	Local, state, territorial, and tribal public health agencies; the public
	<i>6.7.4. Encourage local, state, territorial, and tribal public health officials to engage in regular communication with government, business, and other community sectors to develop and test plans for MCM dispensing.</i>	HHS	Local, state, territorial, and tribal public health agencies; local state territorial, and tribal governments; nongovernmental organizations; private sector; the public
	<i>6.7.5. Encourage local, state, territorial, and tribal public health officials to establish regular contact with their media partners, including television and print and ethnic media, to determine their willingness to support messages to the public regarding MCMs.</i>	HHS	Local, state, territorial, and tribal public health agencies; media

**Objective 7. Ensure prevention or mitigation of environmental and other emerging threats.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
7.1. Enhanced risk analysis and research to improve understanding and anticipation of environmental and emerging threats	<i>7.1.1. Work with partners to strengthen and integrate risk analysis techniques for environmental and other emerging threats that affect national health security.</i>	ASPR, CDC, DHS, USDA	DOD, DOE, DOI, DOJ, EPA, FDA, NIH, ODNI; local, state, territorial, and tribal agencies; private sector; academia
	<i>7.1.2. Work with partners to leverage ongoing and completed research and coordinate agendas for new research to expand knowledge of factors contributing to the development of environmental and other emerging threats, both manmade and naturally occurring, including physical and social factors.</i>	ASPR, CDC, DHS, DOI, FDA, NIH, USDA	DOD, DOE, DOJ, EPA, ODNI, VA; academia
7.2. Enhanced ability to detect and report environmental and other emerging threats early and characterize them fully	<i>7.2.1 Work with partners to improve surveillance of foodborne, waterborne, airborne, plant, and animal pathogens and other contaminants.</i>	CDC, DHS, DOD, DOI, EPA, FDA, USDA	ASPR, DHS; local, state, territorial and tribal agencies; private sector
	<i>7.2.2. Work with partners to monitor long-term health effects.</i>	CDC	DOL, NIH, SAMHSA; local, state, territorial, and tribal public health departments; nongovernmental, private, and academic organizations
7.3. Improved mechanisms to prevent and mitigate environmental and other emerging threats	<i>7.3.1. Continue to work with partners to develop and test tools as part of an ongoing process to improve mechanisms for food and water protection.</i>	CDC, EPA, FDA, USDA	ASPR, DHS, DOD, DOI, OSTP; local, state, territorial, and tribal agencies; private sector; academia
	<i>7.3.2. Continue to work with partners to improve control and mitigation of zoonoses and other infectious diseases.</i>	CDC, FDA, USDA	ASPR, CDC, DHS, DOD, DOI, DOS, FDA, NIH, OGA, OSTP
	<i>7.3.3. Work with partners to improve the safety of emergency response and recovery workers before and during incidents, and in the recovery phase.</i>	ASPR, CDC, DHS, DOL	EPA, OSTP

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>7.3.5. Work with partners to identify, minimize, and mitigate threats posed by potential breaches in biosafety and biosecurity, and the misuse of life sciences information and technology.</i>	ASPR, CDC, USDA	DHS, DOD, DOI, DOJ, NIH, ODNI, OSTP
7.4. Improved ability to respond and recover effectively and efficiently from incidents caused by environmental and emerging threats	<i>7.4.1. Work with partners to improve the ability of local, state, territorial, tribal, federal, international, and private-sector entities to respond to food-related threats, intentional or unintentional.</i>	CDC, DHS, FDA, USDA	DOJ, ODNI; local, state, territorial, and tribal governments
	<i>7.4.2. Work with partners to enhance laboratory support for the management of environmental and other emerging threats.</i>	CDC, DHS, DOI, DOJ, EPA, FDA, USDA	ASPR, DOD, OSTP; national science-based or laboratory-based organizations or associations

**Objective 8. Incorporate post-incident health recovery into planning and response.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
8.1. Promotion of recovery planning, assessment, education, partnerships, and scientific preparedness for health care, behavioral health care, and human services	<i>8.1.1. Promote capabilities for health, behavioral health care, and human services recovery planning and assessment.</i>	ASPR	ACF, CDC, FEMA, SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia
	<i>8.1.2. Promote partnerships among emergency management, health care, behavioral health care, and human services stakeholders by providing technical assistance and education to local, state, territorial, tribal, and nongovernmental partners.</i>	ASPR	ACF, CDC, FEMA, OASH, SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
8.2. Coordinated access to health, behavioral health care, and human services recovery resources after an incident	<i>8.2.1. Work with national health security partners to maximize recovery resources and provide guidance to promote access to health resources that can be used to expedite recovery.</i>	ASPR	ACF, CDC, DOI, FEMA, OASH, SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia
8.3. Evaluation of health care, behavioral health care, and human services recovery efforts to ensure that recovery needs are met and that lessons learned are incorporated into future response and recovery plans	<i>8.3.1. Identify and review existing recovery research, data/evaluation systems, and documented lessons learned in order to establish parameters for post- incident health recovery and make recommendations for systematic improvement.</i>	ASPR	ACF, CDC, DOD, FEMA, OASH, OSTP, SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia
	<i>8.3.2. Based on national guidelines, promote incorporation of recovery-related lessons learned and research findings into response and recovery planning and preparedness activities and documents.</i>	ASPR	ACF, CDC, DOD, DOI, FEMA, OASH, OSTP, SAMHSA, other pertinent HHS agencies; local, state, territorial, tribal government; nongovernmental organizations; academia

**Objective 9. Work with cross-border and global partners to enhance national, continental, and global health security.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
9.1 Cross-border communication, coordination, and collaboration with Canada and Mexico are strengthened.	<i>9.1.1. Lead efforts to improve continental, pan-border, multisectoral planning, capacity-enhancement, preparedness, and response.</i>	HHS	DHS, DOS, DOD, USDA
	<i>9.1.2 Continue to lead and coordinate efforts to support the operational development of cross-border early warning surveillance and situational awareness reporting systems.</i>	HHS, DOD, USAID, USDA	DHS, DOI, DOS
9.2 Communication, coordination, and collaboration with multilateral and additional bilateral partners on global health security are strengthened.	<i>9.2.1 Lead interdepartmental coordination in United States to support the World Health Organization.</i>	HHS	USAID, DHS, DOS, USDA
	<i>9.2.2 Lead interdepartmental coordination on multilateral engagements.</i>	HHS, DOS, DOD	None
	<i>9.2.3 Lead interdepartmental coordination on additional strategic bilateral partnerships.</i>	HHS	None
	<i>9.2.4 Lead efforts to develop public health international emergency and assistance frameworks.</i>	HHS	DHS, DOS, DOD, USAID
	<i>9.2.5 Lead efforts to enhance laboratory biosafety and biosecurity practices.</i>	HHS, DOD, and USDA	DHS, DOS, OSTP
	<i>9.2.6 Lead efforts to incorporate lessons learned and identify remaining gaps in international pandemic influenza preparedness.</i>	HHS	USAID, DOD, USDA, DOS
	<i>9.2.4 Lead efforts to develop public health international emergency and assistance frameworks.</i>	HHS	DHS, DOS, DOD, USAID

**Objective 10. Ensure that all systems that support national health security are based on the best available science, evaluation, and quality improvement methods.**

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
10.1. Efforts to improve the evidence base and evaluation are developed through meaningful interagency, inter-sector collaborations.	<i>10.1.1. Collaborate with a partnership of federal agencies to implement all elements of the Presidential Policy Directive 8 on National Preparedness.</i>	HHS	Other federal agencies
	<i>10.1.2. Work under the framework of the National Infrastructure Protection Plan (NIPP) to coordinate across all critical infrastructure sectors, including the health care and public health sectors.</i>	ASPR, DHS	Health care organizations; local, state, territorial, and tribal public health agencies
	<i>10.1.3. Coordinate the identification of national health security capabilities and related measures for grant and cooperative agreement programs through the Interagency Preparedness Council and Interagency Preparedness Group.</i>	ASPR, CDC, HRSA, DHS, DOT/NHTSA	None
	<i>10.1.4. Establish an NHSS Evaluation and Measurement Working Group and seek input from governmental and nongovernmental experts on relevant issues related to the NHSS.</i>	ASPR	Local, state, territorial, tribal, and federal agencies; nongovernmental organizations
10.2. National health security is increasingly informed by an evidence base.	<i>10.2.1. Review ongoing and completed research within HHS to understand the available knowledge base and to identify significant gaps.</i>	ASPR, CDC, FDA, NIH, other HHS divisions	AHRQ, other HHS divisions, OSTP
	<i>10.2.2. Coordinate to leverage existing research related to national health security, establish HHS's national health security research priorities, develop a plan to fill identified gaps in the knowledge base, and advocate for or identify resources to carry out the necessary research.</i>	ASPR, CDC, FDA, NIH, other HHS divisions	AHRQ, other HHS divisions, OSTP

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>10.2.3. Engage governmental and nongovernmental stakeholders to define the major components of a scientific capability to support all-hazards response, develop a methodology for conducting science in support of all-hazards response, and perform related activities.</i>	ASPR	Local, state, territorial, tribal, and federal agencies; nongovernmental organizations
	<i>10.2.4. Through NIH, establish a Public Health Emergency Research Review Board (PHERRB), a national institutional review board (IRB), to facilitate the ethical conduct of research involving human subjects, expedite the review of research protocols, and conduct related activities.</i>	HHS	Local, state, territorial, tribal, and federal agencies
	<i>10.2.5. Enhance “fusion” capabilities to gather, assimilate, analyze, share, and report on data to ensure that the best available information supports planning and that required information is available as quickly as possible and shared to the maximum extent practicable given operational security requirements with local, state, territorial, tribal, and federal partners to support emergency decisionmaking.</i>	ASPR, CDC	DHS; local, state, territorial, tribal, and federal agencies
10.3. National health security can be measured, evaluated, studied, and improved via a coordinated set of performance measures and standards.	<i>10.3.1. Use the NHSS Evaluation and Measurement Working Group to identify existing measures and data sources that can be used to measure the ten NHSS strategic objectives and progress toward achieving national health security, as well as related activities.</i>	ASPR	Other federal agencies

<b>Outcome</b>	<b>Activity</b>	<b>Lead</b>	<b>Potential Partners</b>
	<i>10.3.2. Establish indicators of implementation, document baselines, and report to ASPR 12 months after approval of this document, and annually thereafter on progress toward implementation.</i>	Leads and co-leads for NHSS Implementation Plan activities	Other federal agencies
	<i>10.3.3. Begin a quadrennial NHSS review to meet the statutory requirement to submit an updated NHSS to Congress.</i>	ASPR	None
10.4. Key stakeholders develop and use tools to ensure continuous improvement of systems supporting national health security.	<i>10.4.1. Engage relevant stakeholders to identify evidence-based practices to improve performance of systems supporting national health security.</i>	ASPR, CDC, DHS, DOT/NHTSA, HRSA	Local, state, territorial, tribal, and federal agencies; nongovernmental organizations; private sector
	<i>10.4.2. Encourage greater utilization of existing quality improvement programs, tools, and techniques with demonstrated success to improve performance of systems supporting national health security and peer-to-peer review and sharing of quality improvement programs, tools, and techniques</i>	ASPR, CDC	Local, state, territorial, tribal, and federal agencies; nongovernmental organizations; private sector

APPENDIX B. CAPABILITIES FOR NATIONAL HEALTH SECURITY BY OBJECTIVE

Objectives	NHSS Capabilities
<p><b>1. Foster informed, empowered individuals and communities.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Public education to inform and prepare individuals and communities</li> <li>• Integrated support from nongovernmental organizations</li> <li>• Public engagement in local decisionmaking</li> <li>• Local social networks for preparedness and resilience</li> <li>• Mitigated hazards to health and public health facilities and systems</li> <li>• Mass care (sheltering, feeding, and related services)</li> <li>• Individual evacuation and shelter-in-place</li> </ul> <p>Support:</p> <ul style="list-style-type: none"> <li>• Emergency public information and warning</li> <li>• Emergency public safety and security</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>
<p><b>2. Develop and maintain the workforce needed for national health security.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Sufficient, culturally competent and proficient public health, health care and emergency management workforce</li> <li>• Volunteer recruitment and management</li> <li>• Legal protections and authorities</li> </ul> <p>Support:</p> <ul style="list-style-type: none"> <li>• Responder safety and health</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>

Objectives	NHSS Capabilities
<p><b>3. Ensure situational awareness.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Risk assessment and risk management</li> <li>• Near-real-time systems for capture and analysis of health security–related data</li> <li>• Information gathering and recognition of indicators and warning</li> <li>• Epidemiological surveillance and investigation</li> <li>• Animal disease surveillance and investigation</li> <li>• Agriculture surveillance and food safety</li> <li>• Chemical, biological, radiological, nuclear, and explosives (CBRNE) detection and mitigation</li> <li>• Laboratory testing</li> <li>• Monitoring of available health care resources</li> </ul> <p>Support:</p> <ul style="list-style-type: none"> <li>• Inter-operable and resilient communications systems</li> <li>• On-site incident management and multiagency coordination</li> <li>• Communications among responders</li> <li>• Emergency public information and warning</li> <li>• Monitoring of physical and behavioral health outcomes</li> <li>• Environmental health</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>

Objectives	NHSS Capabilities
<p><b>4. Foster integrated, scalable health care delivery systems.</b></p>	<p><b>Core:</b></p> <ul style="list-style-type: none"> <li>• Access to health care and social services</li> <li>• Evidence-based behavioral health prevention and treatment services</li> <li>• Application of clinical practice guidelines</li> <li>• Medical equipment and supplies monitoring, management and distribution</li> <li>• Use of remote medical care technology</li> <li>• Emergency triage and pre-hospital treatment</li> <li>• Patient transport</li> <li>• Critical resource monitoring, logistics and distribution</li> <li>• Medical surge</li> <li>• Palliative care education for stakeholders</li> <li>• Fatality management</li> </ul> <p><b>Support:</b></p> <ul style="list-style-type: none"> <li>• Legal protections and authorities</li> <li>• Emergency public information and warning</li> <li>• Citizen engagement in local decisionmaking</li> <li>• Citizen evacuation and shelter in place</li> <li>• Integrated support from nongovernmental organizations</li> <li>• On-site incident management and multiagency coordination</li> <li>• Communications among responders</li> <li>• Sufficient, culturally competent, and proficient public health, health care and emergency management workforce</li> <li>• Volunteer recruitment and management</li> <li>• Monitoring of available health care resources</li> <li>• Laboratory testing</li> <li>• Monitoring of physical and behavioral health outcomes</li> <li>• Management and distribution of medical countermeasures</li> <li>• Administration of medical countermeasures</li> <li>• Responder safety and health</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>

Objectives	NHSS Capabilities
<p><b>5. Ensure timely and effective communications.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Interoperable and resilient communications systems</li> <li>• On-site incident management and multiagency coordination</li> <li>• Communications among responders</li> <li>• Emergency public information and warning</li> </ul> <p>Support:</p> <ul style="list-style-type: none"> <li>• Public education to inform and prepare individuals and communities</li> <li>• Monitoring of available health care resources</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>
<p><b>6. Promote an effective countermeasures enterprise.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Research, development, and procurement of medical countermeasures</li> <li>• Management and distribution of medical countermeasures</li> <li>• Administration of medical countermeasures</li> <li>• Community interventions for disease control</li> </ul> <p>Support:</p> <ul style="list-style-type: none"> <li>• Public education to inform and prepare individuals and communities</li> <li>• Citizens engaged in local decisionmaking</li> <li>• Volunteer recruitment and management</li> <li>• Integrated support from nongovernmental organizations</li> <li>• Legal protections and authorities</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>

Objectives	NHSS Capabilities
<p><b>7. Ensure prevention or mitigation of environmental and other emerging threats to health.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Responder safety and health</li> <li>• Emergency public safety and security</li> <li>• Environmental health</li> <li>• Potable water/wastewater and solid waste disposal</li> </ul> <p>Support:</p> <ul style="list-style-type: none"> <li>• Risk assessment and risk management</li> <li>• Emergency public information and warning</li> <li>• Legal protections and authorities</li> <li>• Coordination with U.S. and international partners</li> <li>• Near-real-time systems for capture and analysis of health security-related data</li> <li>• Information gathering and recognition of indicators and warning</li> <li>• Laboratory testing</li> <li>• Epidemiological surveillance and investigation</li> <li>• Animal disease surveillance and investigation</li> <li>• Agriculture surveillance and food safety</li> <li>• Emergency public information and warning</li> <li>• On-site incident management and multiagency coordination</li> <li>• Communications among responders</li> <li>• Community interventions for disease control</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>
<p><b>8. Incorporate post-incident health recovery into planning and response.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Post-incident social network re-engagement</li> <li>• Case management support and individual assistance</li> <li>• Reconstitution of the public health, medical, and behavioral health infrastructure</li> <li>• Support services network for long-term recovery</li> <li>• Monitoring of physical and behavioral health outcomes</li> </ul> <p>Support:</p> <ul style="list-style-type: none"> <li>• Public education to inform and prepare individuals and communities</li> <li>• Local social networks for preparedness and resilience</li> <li>• Citizens engaged in local decisionmaking</li> <li>• Integrated support from nongovernmental organizations</li> <li>• Access to health care and social services</li> <li>• Environmental health</li> <li>• Potable water/wastewater and solid waste disposal</li> <li>• Evidence-based behavioral health prevention and treatment services</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>

Objectives	NHSS Capabilities
<p><b>9. Work with cross-border and global partners to enhance national, continental, and global health security.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Coordination with U.S. and international partners</li> </ul> <p>Support:</p> <ul style="list-style-type: none"> <li>• Near-real-time systems for capture and analysis of health security-related data</li> <li>• Information gathering and recognition of indicators and warning</li> <li>• Epidemiological surveillance and investigation</li> <li>• Animal disease surveillance and investigation</li> <li>• Agriculture surveillance and food safety</li> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>
<p><b>10. Ensure that all systems that support national health security are based on the best available science, evaluation, and quality improvement methods.</b></p>	<p>Core:</p> <ul style="list-style-type: none"> <li>• Use of capability-based performance measures</li> <li>• Use of quality improvement methods</li> </ul>

## APPENDIX C. GLOSSARY OF KEY TERMS

### **All-hazards**

“Describing an incident, natural or manmade, that warrants action to protect life, property, environment, and public health or safety, and to minimize disruptions of government, social, or economic activities.”<sup>66</sup>

### **At-risk individuals**

Term applied to those individuals who, “before, during, and after an incident . . . may have additional needs in one or more of the following functional areas: communication, medical care, maintaining independence, supervision, and transportation. In addition to those individuals specifically recognized as at-risk in the Pandemic and All-Hazards Preparedness Act (i.e., children, senior citizens, and pregnant women), individuals who may need additional response assistance include those who have disabilities, live in institutionalized settings, are from diverse cultures, have limited English proficiency or are non-English-speaking, are transportation disadvantaged, have chronic medical disorders, and have pharmacological dependency.”<sup>67</sup>

### **Biosafety**

“Development and implementation of administrative policies, work practices, facility design, and safety equipment to prevent transmission of biologic agents to workers, other persons, and the environment.”<sup>68</sup>

### **Biosecurity**

The safe management of infectious materials to protect against loss, theft, diversion, or intentional misuse of microbiological pathogens.

### **Capability**

“Provides the means to accomplish a mission or function resulting from the performance of one or more critical tasks, under specified conditions, to target levels of performance. A capability may be delivered with *any* combination of properly planned, organized, equipped, trained, and exercised personnel that achieves the desired outcome.”<sup>69</sup>

### **Community**

Defined not simply in terms of geography and can refer to a neighborhood, a jurisdiction, or multiple jurisdictions, and includes individuals and their families; private-sector, nongovernmental, and academic organizations; and all forms of government (i.e., local, state, territorial, tribal, and federal).

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<sup>66</sup> U.S. Department of Homeland Security, *National Incident Management System*, Washington, D.C., December 2008.

<sup>67</sup> U.S. Department of Health and Human Services, “At-Risk Individuals,” 2012, accessed online May 13, 2011, at <http://www.phe.gov/Preparedness/planning/abc/Documents/AtRisk.pdf>.

<sup>68</sup> Centers for Disease Control and Prevention, Office of Health and Safety, “Laboratory Biosecurity Glossary,” no date, accessed online May 13, 2011, at [http://www.cdc.gov/od/ohs/biosecurity\\_training/page53.html](http://www.cdc.gov/od/ohs/biosecurity_training/page53.html).

<sup>69</sup> U.S. Department of Homeland Security, *National Preparedness Guidelines*, Washington, D.C., September 2007.

### **Continuum of health care**

The full range of health care organizations and health care delivery settings relevant to national health security, including, but not limited to 9-1-1 call centers/public safety answering points, EMS, emergency departments, hospitals, ambulatory care, physicians' offices, community health centers, specialized care (e.g., dialysis, laboratories, rehabilitation), behavioral health care, long-term care (e.g., nursing homes, assisted living), and home health care and services (e.g., nursing, meals).

### **Credentialing**

A means of identifying individuals who have demonstrated the ability to perform specific tasks or functions. The credentialing process entails the objective evaluation and documentation of an individual's current certification, license, or degree; training and experience; and competence or proficiency to meet nationally accepted standards, provide particular services and/or functions, or perform specific tasks under specific conditions during an incident.<sup>70</sup>

### **Crisis standards of care**

"The conditions under which standards of care would change due to shortage of critical resources"; crisis standards of care may be implemented following "a substantial change in usual health care operations and the level of care it is possible to deliver, which is made necessary by a pervasive (e.g., pandemic influenza) or catastrophic (e.g., earthquake, hurricane) disaster."<sup>71</sup>

### **Critical infrastructure**

The "assets, systems, and networks, whether physical or virtual, so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, public health or safety, or any combination thereof."<sup>72</sup>

### **Disaster behavioral health**

"The provision of mental health, substance abuse, and stress management services to disaster survivors and responders."<sup>73</sup>

### **Dual Use Research**

The development of policies addressing life sciences research that yield information or technologies with the potential to be misused to threaten public health or national security.

### **Environmental hazards**

Threats to food, water, air, soil, plant and animal safety and health, climate change, and occupational hazards.

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<sup>70</sup> U.S. Department of Homeland Security, *National Incident Management System*, Washington, D.C., December 2008.

<sup>71</sup> Institute of Medicine, 2009.

<sup>72</sup> U.S. Department of Homeland Security, "Critical Infrastructure," no date.

<sup>73</sup> U.S. Department of Health and Human Services, "At Risk, Behavioral Health & Community Resilience," no date, accessed May 13, 2011, at <http://www.phe.gov/Preparedness/planning/abc/Pages/default.aspx>.

### **Emergency Medical Services System**

“Any specific arrangement of emergency medical personnel, equipment and supplies designed to function in a coordinated fashion. May be local, regional, State or National.”<sup>74</sup>

### **Emerging threat**

“Emerging threats can be divided into two groups. The first are ones that began with a classic platform or agent, this is the weaponization of disease agents. The second group would be comprised of agents that do not exist in nature and are produced by man.”<sup>75</sup>

### **Enterprise**

A project or undertaking that is particularly difficulty or risky.<sup>76</sup> For example, the recently released *Quadrennial Homeland Security Review (QHSR)* refers to the “homeland security enterprise,” which involves enhancing shared awareness of risks and threats, building capable communities, fostering unity of effort, and fostering innovative approaches and solutions through leading-edge science and technology.<sup>77</sup>

### **Fair Information Practice Principles**

Guidelines from the U.S. Federal Trade Commission that represent widely accepted concepts concerning fair information practice in an electronic marketplace.

### **Food safety**

“Protecting the food supply from microbial, chemical (i.e., arsenic, lead) and physical (i.e., glass, metal) hazards or contamination that may occur during all stages of food production and handling-growing, harvesting, processing, transporting, preparing, distributing and storing. The goal of food safety monitoring is to keep food wholesome.”<sup>78</sup>

### **Health care coalition**

A group of health care organizations working together to collectively leverage resources, thus increasing the scale of the response to meet the needs of their community. A health care coalition organizes individual health care assets into a single functional unit. A coalition may include hospitals, long-term care or alternative treatment facilities, dialysis and other outpatient treatment centers, nursing homes and other skilled nursing facilities, private physician offices, dental care, clinics, community health centers and any other health care asset that may be brought to bear during major medical response. It can provide a central integration mechanism for cooperative planning, information sharing, and management coordination among health care assets, and also establishes a mechanism for integrating medical assets into the jurisdiction’s incident command system.

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<sup>74</sup> U.S. Department of Transportation, *EMS Pandemic Influenza Guidelines for Statewide Adoption*, May 3, 2007, accessed online May 13, 2011, at

<http://www.nhtsa.gov/people/injury/ems/pandemicinfluenzaguidelines/Task61136Web/PDFs/Task%206.1.13.6Lo.pdf>

<sup>75</sup> Lindler et al., 2005, pp. 351–359.

<sup>76</sup> Dictionary.com, “enterprise,” accessed online May 13, 2011, at <http://dictionary.reference.com/browse/enterprise>.

<sup>77</sup> U.S. Department of Homeland Security, *Quadrennial Homeland Security Review Report: A Strategic Framework for a Secure Homeland*, Washington, D.C.: U.S. Department of Homeland Security, February 2010.

<sup>78</sup> University of Rhode Island Cooperative Extension, “Food Safety Education Glossary,” no date, accessed online October 9, 2009, at <http://www.uri.edu/ce/ceec/food/factsheets/glossary.html>.

**Health care delivery system**

Includes primary and hospital care, disaster medicine, behavioral health care, and all other health care services

**Health care organization**

Any type of entity that provides health care, including a private physician's office, dental office, hospital, long-term care or alternative treatment facility, dialysis or other outpatient treatment center, nursing home or other skilled nursing facility, clinic or other community health center, and any other health care asset that provides health care services.

**Health incident**

Refers to a wide range of natural and man-made phenomena that may have health consequences that include, but are not limited to, infectious disease outbreaks, hurricanes, earthquakes, storms, tornadoes, tsunamis, hazardous material spills, nuclear accidents, biological and other terrorist attacks, and fires.

**Health literacy**

Involves three dimensions: the basic knowledge needed to fully understand and take action on health issues (conceptual foundations), the skills necessary to make public health decisions that benefit the community (critical skills), and the skills and resources necessary to address health concerns through civic engagement (civic orientation).<sup>79</sup>

**Health sector**

Includes all parts of the health care delivery system (e.g., primary and hospital care, disaster medicine, and behavioral health care) and the public health system.

**Human services**

In the context of recovery, the term *human services* is intended to be compatible with the term *social services* as used in other national recovery documents.

**Incident Command System**

“A standardized on-scene emergency management construct specifically designed to provide an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations.”<sup>80</sup>

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<sup>79</sup> Freedman et al., 2009.

<sup>80</sup> U.S. Department of Homeland Security, *National Response Framework*, Washington, D.C., January 2008.

## **Jurisdiction**

“A range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authority. Jurisdictional authority at an incident can be political or geographical (e.g., local, state, tribal, territorial, and Federal boundary lines) or functional (e.g., law enforcement, public health).”<sup>81</sup>

## **Medical countermeasures**

Include those drugs, biological products, and devices that meet the definition of “qualified countermeasure,” “that the Secretary determines to be a priority (consistent with sections 302(2) and 304(a) of the Homeland Security Act of 2002) to—treat, identify, or prevent harm from any biological, chemical, radiological, or nuclear agent that may cause a public health emergency affecting national security or treat, identify, or prevent harm from a condition that may result in adverse health consequences or death, and may be caused by administering a drug, biological product, or device that is used [to treat, identify, or prevent harm from such an agent].”<sup>82</sup>

## **Medical surge**

“The capability to rapidly expand the capacity of the existing health care system (long-term care facilities, community health agencies, acute care facilities, alternate care facilities and public health departments) in order to provide triage and subsequent medical care. This includes providing definitive care to individuals at the appropriate clinical level of care, within sufficient time to achieve recovery and minimize medical complications. The capability applies to an incident resulting in a number or type of patients that overwhelm the day-to-day acute-care medical capacity.”<sup>83</sup>

## **National Disaster Medical System (NDMS)**

“A coordinated effort by HHS, DHS, DOD and VA [Department of Veterans Affairs], working in collaboration with the States and other appropriate public or private entities to provide health services, health-related social services, other appropriate human services, and appropriate auxiliary services to respond to the needs of victims of a public health emergency or be present at locations, and for limited periods of time, specified by the Secretary on the basis that the Secretary has determined that a location is at risk of a public health emergency during the time specified.”<sup>84</sup> Includes 112 Disaster Medical Assistance Teams, including Disaster Mortuary Assistance Teams, National Veterinary Response Teams, National Pharmaceutical Assistance Teams, and other related teams and assets. The NDMS is housed in HHS in the Office of the Assistant Secretary for Preparedness and Response.<sup>85</sup>

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<sup>81</sup> U.S. Department of Homeland Security, *National Incident Management System*, Washington, D.C., December 2008.

<sup>82</sup> 110th Congress, *Section 319F-1 of the Public Health Service Act*, 42 U.S.C. 247d-6a(a)(2).

<sup>83</sup> U.S. Department of Homeland Security, *Target Capabilities List: A Companion to the National Preparedness Guidelines*, Washington, D.C., September 2007.

<sup>84</sup> 42 U.S.C. 200hh-11

<sup>85</sup> National Disaster Medical System, accessed online November 18, 2009 at <http://www.hhs.gov/aspr/oepo/ndms/index.html>.

### **National health security**

National health security exists when the Nation and its people are prepared for, protected from, and resilient in the face of health threats or incidents with potentially negative health consequences.

### **National health security workforce**

Encompasses both paid staff and volunteer workers in public health and health care, as well as other disciplines such as pre-hospital EMS systems and emergency management.

### **Nontraditional plants and animals**

Nontraditional plants and animals are those that are not typically found in a region.<sup>86</sup>

### **One Health Initiative**

A movement to forge co-equal, all inclusive collaborations between physicians, veterinarians, and other scientific-health and environmentally related disciplines, including the American Medical Association, American Veterinary Medical Association, the American Society of Tropical Medicine and Hygiene, the Centers for Disease Control and Prevention (CDC), the United States Department of Agriculture (USDA), and the U.S. National Environmental Health Association (NEHA).<sup>87</sup>

### **PAHPA**

Pandemic and All Hazards Preparedness Act, Public Law No. 109-417.<sup>88</sup>

### **Planning alliance**

An alliance that establishes a systematic process for integrating and coordinating local, state, tribal, territorial, and federal medical responses to support optimal surge capacity and capability while protecting patients, health care staff, and other health security workers.

### **Public health**

“The science and practice of protecting and improving the overall health of the community through disease prevention and early diagnosis, control of communicable diseases, health education, injury prevention, sanitation, and protection from environmental hazards.”<sup>89</sup>

### **RSS**

Really Simple Syndication, a web feed technology used to publish works such as blog entries, news headlines, audio, and video that are frequently updated. GeoRSS is an emerging standard for encoding location as part of a web feed.<sup>90</sup>

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<sup>86</sup> For information on plant and animal importation, see, for example, U.S. Department of Agriculture, “About APHIS,” no date, accessed online May 12, 2011, at [http://www.aphis.usda.gov/about\\_aphis/](http://www.aphis.usda.gov/about_aphis/).

<sup>87</sup> One Health Initiative, website, no date, accessed online May 12, 2011, at <http://onehealthinitiative.com/>.

<sup>88</sup> Public Law 109-417, Pandemic and All-Hazards Preparedness Act, December 19, 2006.

<sup>89</sup> U.S. Department of Homeland Security, “Homeland Security Presidential Directive 21: Public Health and Medical Preparedness,” October 18, 2007, accessed online May 12, 2011, at [http://www.dhs.gov/xabout/laws/gc\\_1219263961449.shtm](http://www.dhs.gov/xabout/laws/gc_1219263961449.shtm).

<sup>90</sup> See ArcGIS Resource Center, “GeoRSS Feeds in Explorer,” ArcGIS Blog, September 4, 2008, accessed online May 12, 2011, at <http://blogs.esri.com/Info/blogs/arcgisexplorerblog/archive/2008/09/04/georss-feeds-in-explorer.aspx>.

**Risk analysis**

“The process of assessment and management of risks.”<sup>91</sup>

**Situational awareness**

“The ability to identify, process, and comprehend the critical elements of information about an incident.”<sup>92</sup>

**Social connectedness**

The personal (e.g., family, friend, neighbor) and professional (e.g., service provider, community leader) relationships among community residents.<sup>93</sup>

**Surge capacity**

“A measurable representation of a health care system’s ability to manage a sudden or rapidly progressive influx of patients within the currently available resources at a given point in time.”<sup>94</sup>

**Volunteer**

Includes both people who are (1) associated formally with the system (e.g., register as part of a reserve workforce, train in functional roles with staff or other volunteers, and participate on an interim basis) and (2) ad hoc (e.g., feel compelled to help other workers prior to, during or following an incident and, in some response instances, require just-in-time training).

**Zoonotic infections**

“Any disease or infection that is naturally transmissible from vertebrate animals to humans and vice-versa is classified as a zoonosis.”<sup>95</sup>

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<sup>91</sup> Homeland Security Institute, *Homeland Security Risk Assessment, Vol. I: Setting*, Arlington, Va., RP05-024-01a, June 16, 2006, accessed online at May 12, 2011, at

<http://www.homelandsecurity.org/hsireports/Risk%20Assessment%20Volume%201%20Setting.pdf>.

<sup>92</sup> U.S. Department of Homeland Security, *National Response Framework*, Washington, D.C., January 2008.

<sup>93</sup> R. Lee and S. Robbins, “Measuring Belongingness: The Social Connectedness and Social Assurance Scales,” *Journal of Counseling Psychology*, Vol. 42, No. 2, 1995, pp. 232–241.

<sup>94</sup> American College of Emergency Physicians, “Health Care System Surge Capacity Recognition, Preparedness, and Response,” 2011, accessed online May 13, 2011, at <http://www.acep.org/practres.aspx?id=29506>.

<sup>95</sup> World Health Organization, “Zoonoses and Veterinary Public Health (VPH),” no date, accessed online May 13, 2011, at <http://www.who.int/zoonoses/en/>.

## LIST OF REFERENCES

American College of Emergency Physicians, "Health Care System Surge Capacity Recognition, Preparedness, and Response" 2011. As of April 27, 2012:

<http://www.acep.org/practres.aspx?id=29506>

ArcGIS Resource Center, "GeoRSS Feeds in Explorer," ArcGIS Blog, September 4, 2008. As of April 27, 2012:

<http://blogs.esri.com/Info/blogs/arcgisexplorerblog/archive/2008/09/04/georss-feeds-in-explorer.aspx>

Carafano, James, "Resiliency and Public-Private Partnerships to Enhance Homeland Security," The Heritage Foundation, June 24, 2008. As of April 27, 2012:

<http://www.heritage.org/Research/Reports/2008/06/Resiliency-and-Public-Private-Partnerships-to-Enhance-Homeland-Security>

Centers for Disease Control and Prevention, *Concept Plan for Implementation of the National Biosurveillance Strategy for Human Health*, Washington, D.C., January 2010. As of April 27, 2012:

[http://www.cdc.gov/osels/pdf/Concept\\_Plan\\_V1+5+final+for+print+KMD.PDF](http://www.cdc.gov/osels/pdf/Concept_Plan_V1+5+final+for+print+KMD.PDF)

Centers for Disease Control and Prevention, *National Biosurveillance Strategy for Human Health (NBSHH), Version 2.0*, Washington, D.C., February 2010. As of April 27, 2012:

[http://www.cdc.gov/osels/pdf/NBSHH\\_V2\\_FINAL.PDF](http://www.cdc.gov/osels/pdf/NBSHH_V2_FINAL.PDF)

Centers for Disease Control and Prevention, "Strategic National Stockpile," no date. As of April 27, 2012:

<http://www.cdc.gov/phpr/stockpile/stockpile.htm>

Centers for Disease Control and Prevention, "Ten Essential Public Health Services," no date. As of April 27, 2012:

<http://www.cdc.gov/od/ocphp/nphpsp/essentialphservices.htm>

Centers for Disease Control and Prevention, Office of Health and Safety, "Laboratory Biosecurity Glossary," no date. As of April 27, 2012:

<http://www.cdc.gov/biosafety/biosecuritytraining/page53.html>

CNA Corporation, *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies*, Washington, D.C.: U.S. Department of Health and Human Services, September 2007.

Executive Order 13527, "Establishing Federal Capability for the Timely Provision of Medical Countermeasures Following a Biological Attack," December 30, 2009.

Executive Order 13546, "Optimizing the Security of Biological Select Agents and Toxins in the United States," July 2, 2010.

Federal Emergency Management Organization, *Developing and Maintaining Emergency Operations Plans: Comprehensive Preparedness Guide (CPG) 101*, Washington, D.C., November 2010.

Freedman, D. A., K. D. Bess, H. A. Tucker, D. L. Boyd, A. M. Tuchman, and K. A. Wallston, "Public Health Literacy Defined," *American Journal of Preventive Medicine*, Vol. 36, No. 5, 2009, pp. 446–451.

Gebbie, K., and B. Turnock, "The Public Health Workforce, 2006: New Challenges," *Health Affairs*, Vol. 25, No. 4, 2006, pp. 923–933.

Homeland Security Institute, *Homeland Security Risk Assessment Volume I: Setting*, Arlington, Va., RP05-024-01a, June 16, 2006.

Homeland Security Institute, *Homeland Security Risk Assessment, Vol. I: Setting*, June 16, 2006, RP05-024-01a (accessed online at May 12, 2011 at <http://www.homelandsecurity.org/hsireports/Risk%20Assessment%20Volume%201%20Setting.pdf>).

Hoshaw-Woodard, Stacy, *Description and Comparison of the Methods of Cluster Sampling and Lot Quality Assurance Sampling to Assess Immunization Coverage*, Geneva: World Health Organization, Department of Vaccines and Biologicals, 2011.

Institute of Medicine, *Crisis Standards of Care: Summary of a Workshop Series*, Washington, D.C.: The National Academies Press, 2010.

Institute of Medicine, *Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations: A Letter Report*, Washington, D.C.: The National Academies Press, 2009.

Knebel, A., and S. Phillips, "National Strategy for Health Care System Preparedness," *Disaster Medicine and Public Health Preparedness*, Vol. 3, Suppl. 1, 2009, pp. S4–S6.

Lee, R., and S. Robbins, "Measuring Belongingness: The Social Connectedness and Social Assurance Scales," *Journal of Counseling Psychology*, Vol. 42, No. 2, 1995, pp. 232–241.

Lindler, Luther E., Eileen Choffnes and George W. Korch, "Definition and Overview of Emerging Threats," in Luther E. Linder, Eileen Choffnes and George W. Korch, eds., *Biological Weapons Defense: Infectious Disease and Counterbioterrorism*, New York: Humana Press, 2005, pp. 351–359.

National Biosurveillance Advisory Subcommittee, *Improving the Nation's Ability to Detect and Respond to 21st Century Urgent Health Threats: First Report of the National Biosurveillance Advisory Subcommittee*, October 2009.

National Biosurveillance Advisory Subcommittee, *Improving the Nation's Ability to Detect and Respond to 21st Century Urgent Health Threats: Second Report of the National Biosurveillance Advisory Subcommittee*, June 2011.

National Disaster Medical System (NDMS) (accessed online 11/18/09 at <http://www.hhs.gov/aspr/opeo/ndms/index.html>).

National Institutes of Health, Office of Biotechnology Activities, “Dual Use Research,” no date. As of April 27, 2012:

<http://oba.od.nih.gov/biosecurity/biosecurity.html>

National Security Council, *National Strategy for Countering Biological Threats*, November 2009.

One Health Initiative, website, no date. As of April 27, 2012: <http://www.onehealthinitiative.com/>

Public Law No. 109-417, Pandemic and All-Hazards Preparedness Act, December 19, 2006.

Robinson, Robin, testimony before the Committee on Appropriations Subcommittee on Defense, United States House of Representatives, April 24, 2008. As of April 27, 2012:

<http://www.hhs.gov/asl/testify/2008/04/t20080424a.html>

Smolinski, Mark S., Margaret A. Hamburg, and Joshua Lederberg, eds., *Microbial Threats to Health: Emergence, Detection, and Response*, Washington, D.C.: National Academy of Sciences, Institute of Medicine, Board on Global Health, 2003.

Toner, Eric, Richard E. Waldhorn, Crystal Franco, Ann Norwood, Brooke Courtney, Kunal Rambhia, Matthew Watson, and Thomas V. Inglesby, *The Next Challenge in Healthcare Preparedness: Catastrophic Health Events*, Baltimore, Md.: Center for Biosecurity of UPMC, prepared for the U.S. Department of Health and Human Services, 2009.

U.S. Army Medical Materiel Agency, “Extending the Shelf Life of Critical ‘War Reserves’ Medical Materiel Using the FDA/DOD Shelf Life Extension Program,” March 31, 2005. As of April 27, 2012:

[https://slep.dmsbfda.army.mil/slep/slep\\_info\\_paper\\_mar2005.doc](https://slep.dmsbfda.army.mil/slep/slep_info_paper_mar2005.doc)

U.S. Department of Agriculture, “About APHIS,” no date. As of April 27, 2012: [http://www.aphis.usda.gov/about\\_aphis/](http://www.aphis.usda.gov/about_aphis/)

U.S. Department of Health and Human Services, “At Risk, Behavioral Health, and Human Services Coordination,” 2011. As of April 27, 2012:

<http://www.phe.gov/Preparedness/planning/abc/Pages/default.aspx>

U.S. Department of Health and Human Services, “At-Risk Individuals,” 2012. As of April 27, 2012:

<http://www.phe.gov/Preparedness/planning/abc/Pages/at-risk.aspx>

U.S. Department of Health and Human Services, *Interim Implementation Guide for the National Health Security Strategy of the United States of America*, Washington, D.C., December 2009. As of April 27, 2012:

<http://www.phe.gov/Preparedness/planning/authority/nhss/implementationguide/Documents/iig-final.pdf>

U.S. Department of Health and Human Services, *National Health Security Strategy of the United States of America*, Washington, D.C., December 2009. As of April 27, 2012:

<http://www.phe.gov/Preparedness/planning/authority/nhss/strategy/Documents/nhss-final.pdf>

U.S. Department of Health and Human Services, Public Health Emergency Medical Countermeasures Enterprise, “Biomedical Advanced Research and Development Authority,” no date. As of April 27, 2012:

<https://www.medicalcountermeasures.gov/BARDA.aspx>

U.S. Department of Health and Human Services, *The Global Health Strategy of the U.S. Department of Health and Human Services*, 2011.

U.S. Department of Health and Human Services, *The Public Health Emergency Medical Countermeasures Enterprise Review: Transforming the Enterprise to Meet Long-Range National Needs*, August 2010. As of April 27, 2012:

[http://www.hhs.gov/nvpo/nvac/meetings/upcomingmeetings/korch\\_presentation.pdf](http://www.hhs.gov/nvpo/nvac/meetings/upcomingmeetings/korch_presentation.pdf)

U.S. Department of Homeland Security, “Critical Infrastructure,” 2010. As of April 27, 2012: [http://www.dhs.gov/files/programs/gc\\_1189168948944.shtm](http://www.dhs.gov/files/programs/gc_1189168948944.shtm)

U.S. Department of Homeland Security, “Homeland Security Presidential Directive 18: Medical Countermeasures Against Weapons of Mass Destruction,” January 31, 2007. As of May 13, 2011:

[http://www.dhs.gov/xabout/laws/gc\\_1219175362551.shtm](http://www.dhs.gov/xabout/laws/gc_1219175362551.shtm)

U.S. Department of Homeland Security, “Homeland Security Presidential Directive 21: Public Health and Medical Preparedness,” October 18, 2007.

U.S. Department of Homeland Security, Homeland Security Presidential Directive 21: Public Health and Medical Preparedness (accessed online May 12, 2011 at

[http://www.dhs.gov/xabout/laws/gc\\_1219263961449.shtm](http://www.dhs.gov/xabout/laws/gc_1219263961449.shtm)).

U.S. Department of Homeland Security, *National Incident Management System*, Washington, D.C., December 2008.

U.S. Department of Homeland Security, *National Incident Management System: Guideline for the Credentialing of Personnel*, Washington, D.C., August 2011.

U.S. Department of Homeland Security, *National Incident Management System: Training Program*, Washington, D.C., September 2011.

U.S. Department of Homeland Security, National Incident Management System (Washington, D.C., December 2008).

U.S. Department of Homeland Security, *National Preparedness Guidelines*, Washington, D.C., September 2007.

U.S. Department of Homeland Security, *National Response Framework*, Washington, D.C., January 2008. As of April 27, 2012:

<http://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf>

U.S. Department of Homeland Security, *Quadrennial Homeland Security Review Report: A Strategic Framework for a Secure Homeland*, Washington, D.C., February 2010.

U.S. Department of Homeland Security, Target Capabilities List: A Companion to the National Preparedness Guidelines (Washington, D.C., September 2007).

U.S. Department of Transportation, *EMS Pandemic Influenza Guidelines for Statewide Adoption*, May 3, 2007. As of April 27, 2012:

<http://www.nhtsa.gov/people/injury/ems/pandemicinfluenzaguidelines/Task61136Web/PDFs/Task%206.1.13.6Lo.pdf>

U.S. Environmental Protection Agency, “Our Waters,” no date. As of April 27, 2012: <http://water.epa.gov/type/>

U.S. Food and Drug Administration, “Emergency Preparedness and Response,” no date. As of April 27, 2012:

<http://www.fda.gov/EmergencyPreparedness/MedicalCountermeasures/default.htm>

U.S. Food and Drug Administration, “Food Safety,” no date. As of April 27, 2012:

<http://www.fda.gov/Food/FoodSafety/default.htm>

University of North Carolina Center for Public Health Preparedness, *Focus on Field Epidemiology*, Vol. 5, No. 3: Rapid Needs Assessment and GIS, no date. As of April 29, 2012: <http://ncephp.sph.unc.edu/focus/vol5/issue3/>

University of Rhode Island Cooperative Extension, “Food Safety Education Glossary,” no date. As of April 27, 2012:

<http://www.uri.edu/ce/ceec/food/factsheets/glossary.html>

The White House, *National Security Strategy*, May 2010. As of April 27, 2012: [http://www.whitehouse.gov/sites/default/files/rss\\_viewer/national\\_security\\_strategy.pdf](http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf)

World Health Organization, *International Health Regulations*, 2005. As of April 30, 2012: <http://www.who.int/ihr/en/>

World Health Organization, “The Top Ten Causes of Death,” Fact Sheet No. 310, October 2008. Accessed May 12, 2011: <http://www.who.int/mediacentre/factsheets/fs310/en/index.html>

World Health Organization, “Zoonoses and Veterinary Public Health (VPH),” no date. As of April 27, 2012:

<http://www.who.int/zoonoses/en/> (accessed online May 12, 2011).

World Health Organization, *World Health Report 2007: A Safer Future, Global Public Health Security in the 21st Century*, 2007. As of April 27, 2012:

<http://www.who.int/whr/2007/en/index.html>

Youn, Kyung I., and Thomas T. H. Wan, “Effects of Environmental Threats on the Quality of Care in Acute Care Hospitals,” *Journal of Medical Systems*, Vol. 25, No. 5, pp. 319–331.